

HYPERNUMBERS AND OTHER EXOTIC STUFF



(1) MORE ON THE "ARITHMETICAL" SIDE

Arborescent numbers: higher arithmetic operations and division trees - Henryk Trappmann

http://eretrandre.org/rb/files/Trappmann2007_81.pdf

Tetration Reference - Henryk Trappman and Andrew Robbins - <https://math.eretrandre.org/tetrationforum/attachment.php?aid=387>

Applications - <https://math.stackexchange.com/questions/199862/what-is-the-geometric-physical-or-other-meaning-of-the-tetration>

Publications - <https://math.eretrandre.org/publications.html>

Mathematics of tommy1729 - <https://math.eretrandre.org/tetrationforum/search.php?action=finduserthreads&uid=47>

Tetration.org, What Lies Beyond Exponentiation? - Daniel Geisler - <https://www.tetration.org/>

The family of arithmetics of Ruggero Maria Santilli - <http://www.santilli-foundation.org/docs/10.11648.j.ajmp.s.2015040501.14.pdf>

Isodual Theory of Antimatter with applications to Antigravity, Grand Unification and Cosmology

<https://www.amazon.com/Isodual-Theory-Antimatter-applications-Antigravity/dp/1402045174> (book)

Studies on Santilli's Isonumber Theory - Arun S. Muktibodh - <http://www.santilli-foundation.org/docs/pdf2.pdf>

Elements of Hadronic Mechanics III Experimental verifications - R.M.Santilli

<http://www.santilli-foundation.org/docs/elements-hadronic-mechanics-iii.compressed.pdf>

Initiating Santilli's Iso-Mathematics to Triplex Number... - Nathan O. Schmidt and Reza Katebi - <http://vixra.org/pdf/1308.0051v2.pdf>

<http://thunder-energies.com/> && <http://www.santilli-foundation.org>

Saturation Arithmetic - https://en.wikipedia.org/wiki/Saturation_arithmetic

Symmetric level index - https://en.wikipedia.org/wiki/Symmetric_level-index_arithmetic

A Hybrid Number Representation Scheme Based on Symmetric Level-Index Arithmetic Xunyang Shen and Peter R. Turner

https://www.researchgate.net/publication/221142816_A_Hybrid_Number_Representation_Scheme_Based_on_Symmetric_Level-Index_Arithmetic

Durfee square - https://en.wikipedia.org/wiki/Durfee_square

ZEA A zero-free exact arithmetic - Dominique Michelucci and Jean-Michel Moreau

https://www.researchgate.net/publication/220991026_ZEA_-_A_zero-free_exact_arithmetic

Algebra of screws - https://en.wikipedia.org/wiki/Screw_theory#Algebra_of_screws

On quantum state of numbers - Bernard Le Stum & Adolfo Quirós - <https://arxiv.org/pdf/1310.8143.pdf>

Half-exponential function - https://en.wikipedia.org/wiki/Half-exponential_function

Matrix exponential - https://en.wikipedia.org/wiki/Matrix_exponential

Baker–Campbell–Hausdorff formula - https://en.wikipedia.org/wiki/Baker%E2%80%93Campbell%E2%80%93Hausdorff_formula

N-ary group - https://en.wikipedia.org/wiki/N-ary_group

Circuits over sets of natural numbers - https://en.wikipedia.org/wiki/Circuits_over_sets_of_natural_numbers

The complexity of circuit evaluation over the natural numbers - Pierre McKenzie and Klaus Wagner

<http://www.iro.umontreal.ca/~mckenzie/Dagstuhl02.pdf>

The Unwinding Number - Robert M. Corless and David J. Jeffrey - <https://faculty.e-ce.uth.gr/akritas/CE102/p28-corless.pdf>

Distributive property examples - https://en.wikipedia.org/wiki/Distributive_property#Other_examples

A new arithmetic function of combinatorial significance - Solomon W Golomb - <https://core.ac.uk/reader/82660399>

A Noncommutative Version of the Natural Numbers - Tyler Foster - <https://arxiv.org/pdf/1003.2081.pdf>

Multigrate and dividate: two new arithmetic operations - Eduard Kleihorst - <https://ieeexplore.ieee.org/document/833601>

A new number system: Remainder numbers
<https://math.stackexchange.com/questions/2415896/a-new-number-system-remainder-numbers>

Generalization of the unit interval - William M. Cornette - https://projecteuclid.org/download/pdf_1/euclid.pjm/1102818012

Structure of unital 3-fields - Steven Duplij and Wend Werner - <https://arxiv.org/pdf/1505.04393.pdf>

Ternary field - https://encyclopediaofmath.org/wiki/Ternary_field

Construction, properties and applications of finite neofield - Anthony Donald Keedwell
https://dml.cz/bitstream/handle/10338.dmlcz/119164/CommentatMathUnivCarolRetro_41-2000-2_8.pdf

Quantity calculus - https://en.wikipedia.org/wiki/Quantity_calculus
<http://ingvar.web03.cefit.se/wp-content/uploads/2016/02/physics6.pdf>

Metrological Thinking Needs the Notions of Parametric Quantities, Units, and Dimensions - Ingvar Johansson

List of humorous units of measurement - https://en.wikipedia.org/wiki/List_of_humorous_units_of_measurement

Frink - <https://frinklang.org/>

Solving Cubic Equations with Curly Roots - Dan Kalman and Maurice Burke
<https://www.jstor.org/stable/10.5951/mathteacher.108.5.0392?seq=1>

Radical of an integer - https://en.wikipedia.org/wiki/Radical_of_an_integer

Integer square root - https://en.wikipedia.org/wiki/Integer_square_root

Quadratic residue - https://en.wikipedia.org/wiki/Quadratic_residue

Hypernumbers and Extrafunctions: Extending the Classical Calculus - Mark Burgin
<https://www.amazon.com/Hypernumbers-Extrafunctions-Extending-SpringerBriefs-Mathematics/dp/1441998748>

Exponentiation by squaring - https://en.wikipedia.org/wiki/Exponentiation_by_squaring

Addition-chain exponentiation - https://en.wikipedia.org/wiki/Addition-chain_exponentiation

Egyptian fraction - https://en.wikipedia.org/wiki/Egyptian_fraction

Numerical Polynomial Algebra - Hans Jörg Stetter (arithmetic pseudo-operations, look the chapter on 'Floating-Point Arithmetic')
<https://www.amazon.com/Numerical-Polynomial-Algebra-Hans-Stetter/dp/0898715571>

Ordinal number - https://en.wikipedia.org/wiki/Ordinal_number && Mex - [https://en.wikipedia.org/wiki/Mex_\(mathematics\)](https://en.wikipedia.org/wiki/Mex_(mathematics))

On Unconventional Division by Zero - Jakub Czajko
<http://www.worldscientificnews.com/wp-content/uploads/2018/04/WSN-99-2018-133-147.pdf>

Bouncing factorial - https://googology.fandom.com/wiki/Bouncing_Factorial

Parallel operator - [https://en.wikipedia.org/wiki/Parallel_\(operator\)](https://en.wikipedia.org/wiki/Parallel_(operator))

Fractions in transrational arithmetic - Jan A. Bregstra - <https://transmathematica.org/index.php/journal/article/view/19/23>

Derangement - <https://en.wikipedia.org/wiki/Derangement>

Superpermutation - <https://en.wikipedia.org/wiki/Superpermutation>

A lower bound on the length of the shortest superpattern - Anonymous 4chan Poster, Robin Houston, Jay Pantone, and Vince Vatter
<https://oeis.org/A180632/a180632.pdf>

Encyclopedia of Distances - Michel Marie Deza and Elena Deza
<https://www.amazon.com/Encyclopedia-Distances-Michel-Marie-Deza/dp/3662443414>

MatheMagics for our eartHeart - John A. Shuster - https://www.researchgate.net/publication/362887947_MatheMagics_for_our_eartHeart

International Journal of Division by Zero Calculus - <https://romanpub.com/dbzc-vol-1--2021.php>

Introduction to the Division by Zero Calculus - Saburo Saitoh

<https://www.scirp.org/book/detailedinforofabook.aspx?bookid=2746>

Däumler's conformal mapping - <https://www.horntorus.com/manifolds/conformal.html>

Integer Part - <https://mathworld.wolfram.com/IntegerPart.html>

Standard part function - https://en.wikipedia.org/wiki/Standard_part_function

Continuum between addition, multiplication and exponentiation

<https://math.stackexchange.com/questions/1269643/continuum-between-addition-multiplication-and-exponentiation>

Radical Denesting - Kaan Dokmeci - <https://math.mit.edu/research/highschool/primes/materials/2017/conf/8-2-Dokmeci.pdf>

Generalized zero - http://timescalewiki.org/index.php/Generalized_zero && <http://timescalewiki.org/index.php/Disconjugate>

Medoid - <https://en.wikipedia.org/wiki/Medoid>

Los misterios de la fracción prohibida - Claudi Alsina and Carme Burgués - <https://revistasuma.es/IMG/pdf/56/039-042.pdf>

Mediant - [https://en.wikipedia.org/wiki/Mediant_\(mathematics\)](https://en.wikipedia.org/wiki/Mediant_(mathematics))

Ford circle - https://en.wikipedia.org/wiki/Ford_circle

Question mark function - https://en.wikipedia.org/wiki/Minkowski%27s_question-mark_function

The fifth arithmetical operation - <https://numbermusicrevolution.com/>

New Numerical Methods: The Rational Mean (book) - Domingo Gomez Morin (La quinta operación aritmética)

https://www.amazon.com/gp/product/1520717245/ref=dbs_a_def_rwt_hs_ch_vapi_tpbk_p1_i1

<https://www.youtube.com/watch?v=6IORU03yuvY>

AULOS. LA OTRA LUZ. Music and Consonance. New musical scale not based on the Octave.

https://www.youtube.com/watch?v=gbK_V_7ivDA

<https://domingogomezmorin.wordpress.com/>

Atan2 - <https://en.wikipedia.org/wiki/Atan2> && Sinc - https://en.wikipedia.org/wiki/Sinc_function

Hypot - https://en.wikipedia.org/wiki/Pythagorean_addition

'Ortho-Addition' for Linearizing Quadratic Forms - John A. Shuster - https://www.researchgate.net/publication/362887810_'Ortho-Addition'_for_Linearizing_Quadratic_Forms_defined_on_the_complex_axes_and_the_complexes

abc Conjecture and New Mathematics - Fumiharu Kato - <https://www.youtube.com/watch?v=fNS7N04DLAQ>

Some ternary quasigroups over small sets - http://tamivox.org/dave/math/tern_quasi/index.html

Super omega - https://en.wikipedia.org/wiki/Chaitin%27s_constant#Super_Omega

The five fundamental operations of mathematics: addition, subtraction, multiplication, division, and

modular forms - Kenneth A. Ribet - <https://math.berkeley.edu/~ribet/trinity.pdf>

Engel expansion - https://en.wikipedia.org/wiki/Engel_expansion

Dario Alpern's Web site - <https://www.alpertron.com.ar/ENGLISH.HTM>

Handbook of Continued Fractions for Special Functions - Annie Cuyt, Vigdis Brevik Petersen, Brigitte Verdonk, Haakon Waadeland and

William B. Jones - <https://www.amazon.com/Handbook-Continued-Fractions-Special-Functions/dp/1402069480>

A novel operation associated with Gauss' arithmetic-geometric means - Shinji Tanimoto

<https://arxiv.org/pdf/0708.3521.pdf> ("intermediate operation" between addition and multiplication)

Arithmetic Geometric Mean - https://en.wikipedia.org/wiki/Arithmetic%E2%80%93geometric_mean

Gauss, Landen, Ramanujan, the Arithmetic-Geometric Mean, Ellipses, π , and the Ladies Diary

Gert Almkvist and Bruce Berndt - https://link.springer.com/chapter/10.1007%2F978-3-319-32377-0_8

The total differential, the Cauchy-Riemann equations and the Elysian infinitesimals - Kerry Bemis

Arithmetic errors - <https://en.algorithmica.org/hpc/arithmic/errors/>

Rounding to other values - https://en.wikipedia.org/wiki/Rounding#Rounding_to_other_values

TriINTERCAL - <https://esolangs.org/wiki/TriINTERCAL>

TrybblePusher - <https://esolangs.org/wiki/TrybblePusher>

Heinz mean - https://en.wikipedia.org/wiki/Heinz_mean
Identric mean - https://en.wikipedia.org/wiki/Identric_mean
Logarithmic mean - https://en.wikipedia.org/wiki/Logarithmic_mean

Hypertranscendental number - https://en.wikipedia.org/wiki/Hypertranscendental_number

Infinite compositions of analytic functions - https://en.wikipedia.org/wiki/Infinite_compositions_of_analytic_functions

Monus - <https://en.wikipedia.org/wiki/Monus>
Racks and quandles - https://en.wikipedia.org/wiki/Racks_and_quandles
Absorption law - https://en.wikipedia.org/wiki/Absorption_law
Directoids - <https://math.chapman.edu/~jipsen/structures/doku.php?id=directoids>
Quasi-commutative property - https://en.wikipedia.org/wiki/Quasi-commutative_property
Jacobiator - <https://en.wikipedia.org/wiki/Jacobiator>
Isotopy of an algebra - https://en.wikipedia.org/wiki/Isotopy_of_an_algebra
Bimodule - <https://ncatlab.org/nlab/show/bimodule>
Unipotent - <https://en.wikipedia.org/wiki/Unipotent>
Near-field - [https://en.wikipedia.org/wiki/Near-field_\(mathematics\)](https://en.wikipedia.org/wiki/Near-field_(mathematics))

Smarandache Loops - W. B. Vasantha Kandasamy - <http://fs.unm.edu/Vasantha-Book4.pdf>

When Less is More Visualizing Basic Inequalities - Claudi Alsina and Roger B. Nelsen
<https://www.amazon.com/When-Less-More-Inequalities-Mathematical/dp/0883853426>

Perpetual calendar - William James Sidis - <https://web.archive.org/web/20180618021004/http://www.sidis.net/Calendar.htm>

Multiplicative calculus - https://en.wikipedia.org/wiki/Multiplicative_calculus
Subderivative - <https://en.wikipedia.org/wiki/Subderivative>
Fractal derivative - https://en.wikipedia.org/wiki/Fractal_derivative

A Catalogue of Lattices - Gabriele Nebe and Neil Sloane - <http://www.math.rwth-aachen.de/~Gabriele.Nebe/LATTICES/>

A curious arithmetic of fractal dimension for polyadic Cantor sets - Francisco R. Villatoro - <https://arxiv.org/pdf/0910.5014.pdf>

Timothy Golden and Tersymmetrical Suppression Conspiracy – tanaka
https://archive.org/details/tim_golden_and_tersymmetrical_suppression_conspiracy

Alternative mathematical notation and its applications in calculus - Jakub Marian - https://jakubmarian.com/data/bachelor_thesis.pdf

Partial fraction decomposition - https://en.wikipedia.org/wiki/Partial_fraction_decomposition

Negligible function - https://en.wikipedia.org/wiki/Negligible_function

Sophie Germain's identity - https://oeis.org/wiki/Sophie_Germain%27s_identity

Dialogue on n colored numbers - Armahedi Mahzar - https://issuu.com/armahedimahzar/docs/dialogue_on_n-colored_nubers

Gaussian logarithm - https://en.wikipedia.org/wiki/Gaussian_logarithm
Super-logarithm - <https://en.wikipedia.org/wiki/Super-logarithm>

Carry operator - https://en.wikipedia.org/wiki/Carry_operator
Carry flag - https://en.wikipedia.org/wiki/Carry_flag
Hardware algorithms for arithmetic modules - <http://www.aoki.ecei.tohoku.ac.jp/arith/mg/algorithm.html>
Planar ternary ring - https://en.wikipedia.org/wiki/Planar_ternary_ring
Mathemagic finale: muldiv - <https://xn--2-umb.com/21/muldiv/>

The p-adic integers - Brian Courthoute, Pablo Guzman and Antoine Ronk - <http://math.uni.lu/eml/projects/reports/P-adics.pdf>
A first introduction to p-adic numbers - David A. Madore - <http://www.madore.org/~david/math/padics.pdf>

NumberView - W.I.J. - <https://sourceforge.net/p/cscall/activity/?page=0&limit=100#631e063f66e81d71c95461f1>

Ore condition - https://en.wikipedia.org/wiki/Ore_condition

The kNew NumberLand and Its Gift for a kNew Earth - John A. Shuster
https://www.researchgate.net/publication/362887885_The_kNew_NumberLand_and_Its_Gift_for_a_kNew_Earth

Additive number theory - https://en.wikipedia.org/wiki/Additive_number_theory

Zero-sum problem - https://en.wikipedia.org/wiki/Zero-sum_problem

Subset sum problem - https://en.wikipedia.org/wiki/Subset_sum_problem

Davenport theorem - https://en.wikipedia.org/wiki/Restricted_sumset#Cauchy%E2%80%93Davenport_theorem

Some remarks on the pseudo-linear algebra - Andrea markova - <https://www.sav.sk/journals/uploads/1203130414marko.pdf>

Pseudo-arithmetical operations as a basis for the general measure and integration theory - Pietro Benvenuti and Radko Mesiar
<https://www.sciencedirect.com/science/article/pii/S0020025503002111>

Polylogarithmic function - https://en.wikipedia.org/wiki/Polylogarithmic_function

Polarization of an algebraic form - https://en.wikipedia.org/wiki/Polarization_of_an_algebraic_form

Steiner loops or TS-loops - https://web.archive.org/web/19970721231036/http://www.math.usf.edu/algctlg/ts_loops.html

Steiner quasigroups - https://web.archive.org/web/19970721231133/http://www.math.usf.edu/algctlg/steiner_quasigps.html

TS-quasigroups - https://web.archive.org/web/19970721231140/http://www.math.usf.edu/algctlg/ts_quasigps.html

Vinicius Claudino Ferraz - <https://www.dropbox.com/s/vv6qgj16hgk1sch/Solving%20Any%20Quintic.pdf>

Variation of Parameters 5 Solving Any Quintic - <https://www.youtube.com/watch?v=V9X3EwOlvgw>

Anti-Raemschian quantity - a conglomerate of ants at a scimathic discussion

<https://groups.google.com/g/sci.math/c/i3K3xDzmoEM/m/N5TUUsLuBgAJ>

Hofstadter sequences - https://en.wikipedia.org/wiki/Hofstadter_sequence

Mallows' Sequence - <https://mathworld.wolfram.com/MallowsSequence.html>

The Golden Trisection - <http://www.sacred-geometry.es/?q=en/content/golden-trisection>

Negative Math: How Mathematical Rules Can Be Positively Bent - Alberto A. Martínez

<https://www.amazon.com/Negative-Math-Mathematical-Rules-Positively-ebook/dp/B07DMVNZVP>

Fold - [https://en.wikipedia.org/wiki/Fold_\(higher-order_function\)](https://en.wikipedia.org/wiki/Fold_(higher-order_function))

Map - [https://en.wikipedia.org/wiki/Map_\(higher-order_function\)](https://en.wikipedia.org/wiki/Map_(higher-order_function))

Currying - <https://en.wikipedia.org/wiki/Currying>

S-unit - <https://en.wikipedia.org/wiki/S-unit>

Interval Arithmetic - https://en.wikipedia.org/wiki/Interval_arithmetic

Theories of Interval Arithmetic Mathematical Foundations and Applications - Hend Dawood

https://www.academia.edu/1976964/Theories_of_Interval_Arithmetic_Mathematical_Foundations_and_Applications

Affine arithmetic - https://en.wikipedia.org/wiki/Affine_arithmetic

A Collection of Algebraic Identities - Tito Piezas - <https://sites.google.com/site/tpiezas/Home> && <https://tpiezas.wordpress.com/>

Teoria del Neutro Piccolo (numeric calculations without comma) - T.n.p. Socratis

<https://groups.google.com/g/it.scienza.matematica>

<https://groups.google.com/g/sci.math/c/XddodYR-h08>

Summation $1+2+3+4+\dots$ https://en.wikipedia.org/wiki/1_%2B_2_%2B_3_%2B_4_%2B_%E2%8B%AF

Umbral Calculus - https://en.wikipedia.org/wiki/Umbral_calculus && Bernoulli umbra - https://en.wikipedia.org/wiki/Bernoulli_umbra

Progress Report on Hyper-operations (Zeration) - Constantin A. Rubtsov and Giovanni F. Romerio

<https://math.eretrandre.org/tetrationforum/attachment.php?aid=251>

Ackermann's Function and New Arithmetical Operations (zeration) - Constantin A. Rubtsov and Giovanni F. Romerio

[http://www.rotarysaluzzo.it/Z_Vecchio_Sito/filePDF/Iperoperazioni%20\(1\).pdf](http://www.rotarysaluzzo.it/Z_Vecchio_Sito/filePDF/Iperoperazioni%20(1).pdf)

Diamond Theory - Steven H. Cullinane - <https://web.archive.org/web/20200107063523/http://finitegeometry.org/sc/gen/dth/>

DiamondTheory.html

Galois Imaginary - <https://mathworld.wolfram.com/GaloisImaginary.html>

Congruence Classes of Polynomials Modulo $p(x)$ over a Field

<http://mathonline.wikidot.com/congruence-classes-of-polynomials-modulo-p-x-over-a-field>

Galois Theory : 12 lessons in Modern Mathematics through Concepts and Intuition - Fumiharu Kato

<https://www.amazon.co.jp/dp/4044006822?tag=kadoofce-22>

Galois : The Life of a Genius Mathematician - Fumiharu Kato (year 2020)
https://www.amazon.co.jp/-/en/gp/product/B083Z6KNYB/ref=dbs_a_def_rwt_hsch_vapi_tkin_p1_i2

Abel and the insolubility of the quintic - Jim Brown - <http://www.math.caltech.edu/~jimlb/abel.pdf>
On the Argument of Abel - William Rowan Hamilton - <https://www.emis.de/classics/Hamilton/Abel.pdf>
Back to solving the quintic, depression and Galois primes - Semjon Adlaj - <https://pca-pdmi.ru/2018/files/13/PCA2018GP5.pdf>

Constant problem - https://en.wikipedia.org/wiki/Constant_problem

Theory of holors - Parry Moon and Domina Eberle Spencer
<https://www.amazon.com/Theory-Holors-Generalization-Moon-Spencer/dp/0521019001>

Penrose mathematical notation - https://en.wikipedia.org/wiki/Penrose_graphical_notation

Demonic composition - https://en.wikipedia.org/wiki/Demonic_composition

Chemical equation - https://en.wikipedia.org/wiki/Chemical_equation#Structure

Equipollence - [https://en.wikipedia.org/wiki/Equipollence_\(geometry\)](https://en.wikipedia.org/wiki/Equipollence_(geometry))

Converse relation - https://en.wikipedia.org/wiki/Converse_relation

Tolerance relation - https://en.wikipedia.org/wiki/Tolerance_relation

Z-relation - https://en.wikipedia.org/wiki/Interval_vector#Z-relation

Accessibility relation - https://en.wikipedia.org/wiki/Accessibility_relation

Setoid - <https://en.wikipedia.org/wiki/Setoid>

Permutable congruences - <https://planetmath.org/PermutableCongruences>

Allegory - [https://en.wikipedia.org/wiki/Allegory_\(mathematics\)](https://en.wikipedia.org/wiki/Allegory_(mathematics))

Relational mathematics : An Introduction - Gunther Schmidt

<https://www.amazon.com/Relational-Mathematics-Encyclopedia-Applications-Book-ebook/dp/B01DM25H96>

The field $\mathbb{Q}(2\cos(\pi/n))$, its Galois group and length ratios in the regular n -gon - Wolfdieter Lang
<https://arxiv.org/pdf/1210.1018.pdf> (new equivalence relation called (Modd n))

Generalized inverse - https://en.wikipedia.org/wiki/Generalized_inverse

Permanent - [https://en.wikipedia.org/wiki/Permanent_\(mathematics\)](https://en.wikipedia.org/wiki/Permanent_(mathematics))

Drazin inverse - https://en.wikipedia.org/wiki/Drazin_inverse

Supermatrix - <https://en.wikipedia.org/wiki/Supermatrix>

Hyperdeterminant - <https://en.wikipedia.org/wiki/Hyperdeterminant>

...some others can be found in https://en.wikipedia.org/wiki/List_of_types_of_numbers

(2) TROPICAL SECTION

Introduction to Tropical Geometry - Diane Maclagan and Bernd Sturmfels
<http://www.cs.technion.ac.il/~janos/COURSES/238900-13/Tropical/MaclaganSturmfels.pdf>
https://www.youtube.com/watch?v=1_ZfvQ3o1Ac (friendly introduction)

Min-plus matrix multiplication - https://en.wikipedia.org/wiki/Min-plus_matrix_multiplication

Tropical Geometry - https://en.wikipedia.org/wiki/Tropical_geometry

Amoeba - https://en.wikipedia.org/wiki/Amoeba_%28mathematics%29

Tropical projective space - https://en.wikipedia.org/wiki/Tropical_projective_space

Log semiring - https://en.wikipedia.org/wiki/Log_semiring && Log SumExp - <https://en.wikipedia.org/wiki/LogSumExp>

Tight spans, Isbell completions and semi-tropical modules - Simon Willerton
<https://arxiv.org/pdf/1302.4370.pdf> (one half of the tropical semiring)

Hyperfields for Tropical Geometry I. Hyperfields and dequantization - Oleg Viro
<https://arxiv.org/pdf/1006.3034.pdf> (see section "6. Tropical addition of complex numbers")

Supertropical quadratic forms II: Tropical trigonometry and applications - Zur Izhakian, Manfred Knebusch and Louis Rowen
https://www.researchgate.net/publication/326630264_Supertropical_Quadratic_forms_II_Tropical_Trigonometry_and_Applications

Tropical geometry to analyse demand - Elizabeth Baldwin and Paul Klemperer
http://elizabeth-baldwin.me.uk/papers/baldwin_klemperer_2014_tropical.pdf

International Trade Theory and Exotic Algebras - Yoshinori Shiozawa

<https://link.springer.com/article/10.1007/s40844-015-0012-3>

Complete Tropical Bezout's Theorem and Intersection Theory theory in the tropical projective plane - Gretchen Rimmasch
<https://scholarsarchive.byu.edu/cgi/viewcontent.cgi?article=2504&context=etd>

(3) NUMERALS ON THE NUMERIC

Lunar Arithmetic or Dismal Arithmetics - David Applegate, Marc LeBrun and N. J. A. Sloane

<https://cs.uwaterloo.ca/journals/JIS/VOL14/Sloane/carry2.pdf>

<https://www.youtube.com/watch?v=cZkGeR9CWbk>

Balanced Ternary - https://en.wikipedia.org/wiki/Balanced_ternary

https://pt.wikipedia.org/wiki/Tern%C3%A1rio_balanceado#/media/Ficheiro:Balanced_ternary.svg

Double-Base Number System for Multi-Scalar Multiplications - Christophe Doche, David R. Kohel and Francesco Sica

<https://www.iacr.org/archive/eurocrypt2009/54790501/54790501.pdf>

Skew binary number system - https://en.wikipedia.org/wiki/Skew_binary_number_system

Two Skew-Binary Numeral Systems and One Application - Amr Elmasry and Jyrki Katajainen

<http://cphstl.dk/Paper/TOCS-2011/journal.pdf>

Zero Displacement Ternary Number System : the most economical way of representing numbers

Fernando Guilherme and Silvano Lobo Pimentel

https://www.researchgate.net/publication/258241283_Zero_Displacement_Ternary_Number_System_the_most_economical_way_of_representing_numbers

Multiple-Base Number System: Theory and Applications - Vassil Dimitrov, Graham Jullien, and Roberto Muscedere

Quote Notation - Eric C. R. Hehner and R. N. S. Horspool - <http://www.cs.toronto.edu/~hehner/ratno.pdf>

https://en.wikipedia.org/wiki/Quote_notation

Beyond the Complexes: Toward a lattice based number system - J. Köpflinger, J. A. Shuster

<https://www.cs.du.edu/~petr/milehigh/2013/Koeplinger.pdf>

Linear Numeral System - Ian Mackie - <http://www.ianmackie.com/papers/linns.pdf>

New approach could sink floating point computation, John Leroy Gustafson

<https://www.nextplatform.com/2019/07/08/new-approach-could-sink-floating-point-computation/>

https://en.wikipedia.org/wiki/Double-precision_floating-point_format

Unum - [https://en.wikipedia.org/wiki/Unum_\(number_format\)](https://en.wikipedia.org/wiki/Unum_(number_format))

"Strength in Numbers: Unums and the Quest for Reliable Arithmetic" by Ferris Ellis - https://www.youtube.com/watch?v=nVNYjmi_qbY

The residue logarithmic number system: Theory and implementation - Mark G. Arnold

https://www.researchgate.net/publication/4156476_The_residue_logarithmic_number_system_Theory_and_implementation

A Low-Power Two-Digit Multi-dimensional Logarithmic Number System Filterbank Architecture for a

Digital Hearing Aid -- Roberto Muscedere, Vassil Dimitrov, Graham Jullien and William Miller

https://www.researchgate.net/publication/26532063_A_Low-Power_Two-Digit_Multi-dimensional_Logarithmic_Number_System_Filterbank_Architecture_for_a_Digital_Hearing_Aid

Methodology of numerical computations with infinities and infinitesimals - Yaroslav D. Sergeyev

[http://www.theinfinitycomputer.com/The_second_paper_to_read_\(Lagrange_Lecture\).pdf](http://www.theinfinitycomputer.com/The_second_paper_to_read_(Lagrange_Lecture).pdf)

<https://www.numericalinfinities.com/>

Hetero Base Arithmetic - Raghavendra Lingayya

<https://web.archive.org/web/20210213220933/http://www.numbersystem.org/hetero-base-arithmetic-operations.html>

Raghavendra's Analysis - <https://www.youtube.com/user/raanalysis/videos>

<https://www.medioq.com/XX/Unknown/122535227852808/R-Analysis-For-Real-Mathematics-Education>

<https://bangaloremirror.indiatimes.com/bangalore/others/simplifying-lessons/articleshow/21899416.cms>

Quater-imaginary base - https://en.wikipedia.org/wiki/Quater-imaginary_base

Zot-Binary: a new numbering system with an application on big-integer multiplication – Shahram Jahani and Azman Samsudin

<http://www.jatit.org/volumes/Vol48No1/5Vol48No1.pdf>

Decimal Fractions - https://en.wikipedia.org/wiki/Simon_Stevin#Decimal_fractions

A Number System with Continuous Valued Digits and Modulo Arithmetic - Aryan Saèd, Majid Ahmadi and Graham A. Jullien - https://www.academia.edu/13000520/A_number_system_with_continuous_valued_digits_and_modulo_arithmetic

Hereditary Base notation - https://en.wikipedia.org/wiki/Goodstein%27s_theorem#Hereditary_base-n_notation

New Arithmetic Algorithms for Hereditarily Binary natural numbers - Paul Tarau
<https://www.cse.unt.edu/~tarau/research/2014/HBinX.pdf>

Predicting Improper Fractional Base Integer Characteristics - Billy Dorminy - <http://educ.jmu.edu/~lucassk/Papers/DorminyFracBase.pdf>

Horus Eye Fractions - https://en.wikipedia.org/wiki/Eye_of_Horus#Mathematics

Egyptian geometry - https://en.wikipedia.org/wiki/Egyptian_geometry

Ancient Egyptian units of measurement - https://en.wikipedia.org/wiki/Ancient_Egyptian_units_of_measurement

Red auxiliary number - https://en.wikipedia.org/wiki/Red_auxiliary_number

Finger Binary - https://en.wikipedia.org/wiki/Finger_binary

Nemeth braille - https://en.wikipedia.org/wiki/Nemeth_Braille

A History of Mathematical Notations (Dover Books on Mathematics)

<https://www.amazon.com/History-Mathematical-Notations-Dover-Mathematics/dp/0486677664>

The Words of Mathematics : An Etymological Dictionary of Mathematical Terms used in English - Steven Schwartzman

<https://www.amazon.com/Words-Mathematics-Etymological-Dictionary-Mathematical/dp/0883855119>

J vocabulary- <https://code.jssoftware.com/wiki/NuVoc>

Bibi-binary - <https://en.wikipedia.org/wiki/Bibi-binary>

The Denormal Logarithmic Number System - Mark G. Arnold Sylvain Collange

https://www.researchgate.net/publication/262371524_The_Denormal_Logarithmic_Number_System

The generalized golden proportions, a new theory of real numbers, and ternary mirror-symmetrical arithmetic - Alexey Stakhov

<http://fs.unm.edu/SN/TheGeneralizedGolden.pdf>

Construction of Algorithms for Parallel Addition - Jan Legersky and Milena Svobodová

https://jan.legersky.cz/talks/ConstructionParAddAlg_WorkshopOnAutomaticSequences.pdf

On-line algorithms for multiplication and division in real and complex numeration systems – Marta Brzicová, Christiane Frougny, Edita Pelantová and Milena Svobodová - <https://arxiv.org/abs/1610.08309v5>

Computing with Exact Real Numbers in a Radix-r System - Alexander Kaganovsky

https://www.researchgate.net/publication/220368828_Computing_with_Exact_Real_Numbers_in_a_Radix-r_System

A variant of Ostrowski numeration - Emmanuel Cabanillas - <https://arxiv.org/pdf/1904.01874v2.pdf>

LCM number system - https://oeis.org/wiki/LCM_numeral_system && Primorial - https://oeis.org/wiki/Primorial_numeral_system

Factorial number system - https://oeis.org/wiki/Factorial_numeral_system && https://en.wikipedia.org/wiki/Factorial_number_system

Combinadic - <http://www.thefullwiki.org/Combinadic>

Typographical Number Theory - https://en.wikipedia.org/wiki/Typographical_Number_Theory

Gödel numbering - https://en.wikipedia.org/wiki/G%C3%B6del_numbering

Octomatics number system - <http://octomatics.org/>

Sandpiles - Luis David Garcia-Puente - <http://people.reed.edu/~davidp/> && <https://www.youtube.com/watch?v=1MtEUErz7Gg>

Depth-value Notation - <http://iconicmath.com/arithmetic/depthvalue/>

Location arithmetic - https://en.wikipedia.org/wiki/Location_arithmetic

Yupana - <https://en.wikipedia.org/wiki/Yupana> && Yupana Inka en Matergia! - <https://www.youtube.com/watch?v=gTBEqIkhGSO>

Japan's ancient secret to better cognitive memory (soroban) - BBC REEL - <https://www.youtube.com/watch?v=s6OmQXCsYt8>

...some can be found in the following wikipedia links :

https://en.wikipedia.org/wiki/List_of_numeral_systems#By_culture_/time_period
https://en.wikipedia.org/wiki/Category:Non-standard_positional_numeral_systems
https://en.wikipedia.org/wiki/Non-standard_positional_numeral_systems

(4) NUMERALS BEYOND NUMERIC

Facial Action Coding System - Carl-Herman Hjortsjö, Paul Ekman and Wallace V. Friesen
https://en.wikipedia.org/wiki/Facial_Action_Coding_System#Codes_for_action_units

Notación de apreciación de intensidad emocional y partitura emocional - Susana Bloch
<https://www.casadellibro.com/ebook-surfeando-la-ola-emocional-ebook/9789568601287/2108202>
Respiratory patterns - http://onlinepdfcatalog.com/images/pdf/albaemoting.cl1-2_1.jpg
Alba Emoting - https://en.wikipedia.org/wiki/Susana_Bloch#Alba_Emoting

Plutchik's Wheel of emotions - https://en.wikipedia.org/wiki/Emotion_classification#Plutchik's_wheel_of_emotions
Interactive wheel - <https://www.6seconds.org/2022/03/13/plutchik-wheel-emotions/>

Heartmath - Doc Lew Childre Jr. - <https://www.heartmath.com/science/>

Emojitocode (code learning with emojis) - <https://www.emojicode.org/> && Emojipedia - <https://emojipedia.org/>

Laban notation - <https://en.wikipedia.org/wiki/Labanotation>
Knust's Dictionary of Kinetography Laban - <https://knustdict.netlify.app/entries>

Geometrography - <https://en.wikipedia.org/wiki/Geometrography>

A Compiler for 3D Machine Knitting - <https://la.disneyresearch.com/wp-content/uploads/A-Compiler-for-3D-Machine-Knitting-Paper.pdf>

Algoritmo del cortejo humano, heterosociabilidad y diálogo venusiano
MAX-VA-CUA-RO Secuenciado - Equipo de Seducción Científica - <https://dinamicassociales.com/>
Las 3 C's y macrohabilidades del Δ Helio - Equipo de Psicología Heterosocial - <https://www.egolandseducacion.com/>

Genealogical numbering systems - https://en.wikipedia.org/wiki/Genealogical_numbering_systems
Symbols and diagrams of the Family Tree - <https://en.wikipedia.org/wiki/Genogram#Symbols>
Six basic patterns of kinship - https://en.wikipedia.org/wiki/Kinship_terminology#Six_basic_patterns_of_kinship
WikiTree (a wiki for genealogists) - <https://www.wikitree.com/>

Reading fluids circuit diagrams : hydraulic & pneumatic symbols
<https://www.valmet.com/media/articles/up-and-running/reliability/FRFluidDwgs1/>
Electrical, pneumatic and logic symbols
<https://www.festo-didactic.com/ov3/media/customers/1100/00525179001075223667.pdf>
A Primer on Basic on Basic Hydraulic and Pneumatic Symbols
<https://3dinsider.com/basic-basic-hydraulic-and-pneumatic-symbols/>

Crash Course in Quantum Computing Using Very Colorful Diagrams - Rishabh Anand
<https://towardsdatascience.com/quantum-computing-with-colorful-diagrams-8f7861cfb6da>
Demystifying Quantum Gates One Qubit At A Time - Jason Roell
<https://towardsdatascience.com/demystifying-quantum-gates-one-qubit-at-a-time-54404ed80640>
Quantum Circuit Diagrams - <https://stem.mitre.org/quantum/quantum-concepts/quantum-circuit-diagrams.html>
Quantum logic gate - https://en.wikipedia.org/wiki/Quantum_logic_gate#/media/File:Quantum_Logic_Gates.png

Erdős number - https://en.wikipedia.org/wiki/Erd%C5%91s_number
Erdős number project - <https://sites.google.com/oakland.edu/grossman/home/the-erdoes-number-project>

Feynman diagram - https://en.wikipedia.org/wiki/Feynman_diagram

Frege Notation - https://en.wikipedia.org/wiki/Begriffsschrift#Notation_and_the_system

Xenharmonic (a wiki about musical tuning) - <https://en.xen.wiki/>

Universal Script - Matthew DeBlock - <http://www.dsript.org/> (Uscript is universal logographic language based on math and physics)
Kēlen Ceremonial Interlace Alphabet - <https://www.terjemar.net/kelen/lajathin.php>
Nato phonetic alphabet - https://en.wikipedia.org/wiki/NATO_phonetic_alphabet Q-code https://en.wikipedia.org/wiki/Q_code

Cookbook:Units of measurement - https://en.wikibooks.org/wiki/Cookbook:Units_of_measurement

Mateschef: Un sofrito de números y formas para chefs y gourmets - Claudi Alsina
<https://www.amazon.com/Mateschef-sofrito-n%C3%BAmoros-formas-gourmets/dp/8434422719>

QUANTUM-LANGUAGE-PARSE-SYNTAX-GRAMMAR (<https://dwmlc.com/>)
(an exotic grammar obtained after squashing an assembly programmer against a judge)
https://en.wikipedia.org/wiki/David_Wynn_Miller#Constructed_language_and_linguistic_theories
<https://github.com/lismore/MathematicalInterfaceForLanguage/blob/master/README.md>
: Russell-Jay: Gould. - <https://www.youtube.com/channel/UC2FPVSe66WpLdfoiQem4FzA/videos>
:QUANTUM-GRAMMAR-CHANNEL: - <https://www.youtube.com/c/QUANTUMGRAMMARCHANNEL/videos>

Neuro-optometry - Deborah G Zelinsky - <https://mindeye.com/research/>
Pen and paper excises - Donalee Markus - <https://www.designsforstrongminds.com/paper-exercises>
Conference for the American Optometric Association - Clark Elliott - <https://www.youtube.com/watch?v=LXCoQsLYWw>
Parents with Autism: Neuroplasticity in Action - <https://www.youtube.com/watch?v=Ak7A6cMrrQM>

Lin4Neuro (neuroimaging) - https://www.nemotos.net/?page_id=29
Talairach coordinates - https://en.wikipedia.org/wiki/Talairach_coordinates
The End of Mental Illness: How Neuroscience Is Transforming Psychiatry - Daniel G. Amen
<https://www.amazon.com/End-Mental-Illness-Neuroscience-Transforming/dp/1496438159>
The most important lesson from 83,000 brain scans - <https://www.youtube.com/watch?v=esPRsT-lmw8>

Approximate number system - https://en.wikipedia.org/wiki/Approximate_number_system
Numerical cognition - https://en.wikipedia.org/wiki/Numerical_cognition
Number sense in animals - https://en.wikipedia.org/wiki/Number_sense_in_animals
Together with dyscalculia, ageometresia, dysgraphia, financial illiteracy
Innumeracy - https://en.wikipedia.org/wiki/Innumeracy_%28book%29
Hypernumeracy - <https://www.andnextcomesl.com/2019/10/hypernumeracy.html>

WikiOdour (a wiki about odor metric) - Scentroid - <https://scentroid.com/wikiodour/>
NASA's Chief Sniffer - https://www.youtube.com/watch?v=oRdgmN_Yq3U
The perfume maker in Dubai Gold Souq who can create any fragrance - <https://www.youtube.com/watch?v=5WUu0FxyPw>

(5) TRIANGLE ZONE

A treatise on the analytical geometry of the point, line, circle, and conic sections, containing an account of its most recent extensions, with numerous examples - John Casey - <https://archive.org/details/cu31924001520455>
Modern triangle geometry - https://en.wikipedia.org/wiki/Modern_triangle_geometry

Trilinear Coordinates - <https://mathworld.wolfram.com/TrilinearCoordinates.html>
https://en.wikipedia.org/wiki/Incenter#Trilinear_coordinates
Transformation of trilinear and quadriplanar to and from cartesian coordinates - John B Mertie
http://www.minsocam.org/ammin/AM49/AM49_926.pdf
Special Isocubics in the Triangle Plane - Jean-Pierre Ehrmann and Bernard Gibert
<https://bernard-gibert.pagesperso-orange.fr/files/Resourc/SITP.pdf>
The Encyclopedia of Triangle Centers - <https://faculty.evansville.edu/ck6/encyclopedia/ETC.html>
Bicentric Pairs of Points and Related Triangle Centers - Clark Kimberling - <https://forumgeom.fau.edu/FG2003volume3/FG200303.pdf>

Barycentric Coordinates - <https://mathworld.wolfram.com/BarycentricCoordinates.html>
Green Coordinates - Yaron Lipman, David Levin and Daniel Cohen-Or https://www.wisdom.weizmann.ac.il/~ylipman/GC/gc_techrep.pdf
Harmonic Coordinates - Tony DeRose and Mark Meyer - <https://graphics.pixar.com/library/HarmonicCoordinates/paper.pdf>
The barycentric conspiracy - Fabian "ryg" Giesen - <https://fgiesen.wordpress.com/2013/02/06/the-barycentric-conspirac/>
Areal Coordinates - <https://mathworld.wolfram.com/ArealCoordinates.html>
Approach on area coordinate, volume coordinate an their usage in true 3dgis - Gang Liao, Qingyuan Li, Xu Chen and Jiarong Zheng
https://www.researchgate.net/publication/242605764_APPROACH_ON_AREA_COORDINATE_VOLUME_COORDINATE_AND_THEIR_SAGE_IN_TRUE_3DGIS
Areal Co-ordinate Methods in Euclidean Geometry - Tom Lovering - <https://bmos.ukmt.org.uk/home/areals.pdf>

Synergetics Coordinates - <https://mathworld.wolfram.com/SynergeticsCoordinates.html> (Clifford J. Nelson 's Wolfram Notebooks)
Buckminster Fuller Notebooks - <https://library.wolfram.com/infocenter/MathSource/600/>
Bucky Number Mandelbrot - <https://library.wolfram.com/infocenter/MathSource/428/>
Four Triangle Fractals using Bucky Numbers and Synergetics Coordinates - <https://library.wolfram.com/infocenter/MathSource/754/>
Synergetics Coordinates Applications - Clifford J. Nelson - <https://web.archive.org/web/20040613235632/http://users.adelphia.net/~cnelson9/>
Tetra Space Co-ordinates A tetrahedron-based system of space co-ordinates - Josef Hasslberger - http://history.hasslberger.com/phy/phy_6.htm

Quadray coordinates - https://en.wikipedia.org/wiki/Quadray_coordinates
Polysign Numbers - Tim Golden - <http://www.bandtechnology.com/PolySigned/index.html>

Pacman Product for Polysigned numbers - Tanaka - <https://archive.org/details/polysignedpacmanproduct>
On intertwined polysigned p3 and equatorial geometry - Tanaka - https://archive.org/details/intertwined_polysigned_p3_on_the_equator
Notas Sobre Polisignos Y Objetos Tertiarios – Kujonai - <https://vixra.org/pdf/2002.0570v1.pdf>
Understanding Polysign Numbers the Standard Way - Hagen von Eitzen - <http://www.von-eitzen.de/math/PolysignNumbers.pdf>
Lua Digital: Matemática (Portuguese Edition) Roberto Siqueira Costa
<https://www.amazon.com/Lua-Digital-Roberto-Siqueira-Costa-ebook/dp/B0118HD4V0>
Chromatic Numbers and Ternary Algebra - Kavosh Havaledarnejad
https://www.academia.edu/25274352/Chromatic_Numbers_and_Ternary_Algebra
An Euler phi function for the Eisenstein integers and some applications - Emily Gullerud, Aba Mbirika - <https://arxiv.org/abs/1902.03483>
Tropical projective space - https://en.wikipedia.org/wiki/Tropical_projective_space
Pohlke's theorem - https://en.wikipedia.org/wiki/Pohlke's_theorem

On anharmonic co-ordinates - William Rowan Hamilton - <https://www.emis.de/classics/Hamilton/Anharm.pdf>
Anharmonic coordinates - Henry William Lovett Hime - <https://archive.org/details/anharmoniccoordi00himerich>
The Mathematical Papers of Sir William Rowan Hamilton: Volume 4, Geometry, Analysis, Astronomy, Probability and Finite Differences, Miscellaneous - <https://www.amazon.com/Mathematical-Papers-William-Rowan-Hamilton/dp/052159216X>

Triangular root - https://en.wikipedia.org/wiki/Triangular_number#Triangular_roots_and_tests_for_triangular_numbers

Hedronometry (Dimensionally enhanced Trigonometry) - Blue the hedronometer - <http://daylateanddollarshort.com/mathdocs/>
Heron-like hedronometric results for tetrahedral volume - <https://vdocuments.mx/heron-like-hedronometric-results-for-d-howard-eves-2-notes-the-theorem.html?page=1>

Trigonometry of a tetrahedron - https://en.wikipedia.org/wiki/Trigonometry_of_a_tetrahedron
Three dimensional geometry, ZOME, and the elusive tetrahedron
https://www.maths.unsw.edu.au/sites/default/files/3dgeom_zome_tetrahedron_seminar.pdf
La géométrie des tétraèdres - Philippe Tilleuil

A New and Very Long Proof of the Pythagoras Theorem - Kaushik Basu - <http://kaushikbasu.org/Pythagoras%206.pdf>

Ternary arithmetic, factorization, and the class number one problem - Aram Bingham - <https://arxiv.org/pdf/2002.02059v2.pdf>

Parallelogon - <https://en.wikipedia.org/wiki/Parallelogon>
Trigonal trapezohedral honeycomb - https://en.wikipedia.org/wiki/Trigonal_trapezohedral_honeycomb
Rhombic dodecahedral honeycomb - https://en.wikipedia.org/wiki/Rhombic_dodecahedral_honeycomb

Maxicode - <https://en.wikipedia.org/wiki/MaxiCode>

Solid Geometry with Problems and Applications - H. E. Slaught and N. J. Lennes - <https://www.gutenberg.org/files/29807/29807-pdf.pdf>
Polyhedral angle - https://encyclopediaofmath.org/wiki/Polyhedral_angle

Cubic Pythagoras – Luis Teia (pythagoras with cubes instead of squares)
<https://wonderfulengineering.com/pythagoras-theorem-has-been-upgraded-to-3d-and-now-requires-a-120-page-proof/>
Geometry of the 3D Pythagoras' Theorem - <https://www.youtube.com/watch?v=QWPuPX5DHHI>
<https://web.archive.org/web/20170922045632/http://www.ccsenet.org/journal/index.php/jmr/article/viewFile/64646/34833>
Fermat's Theorem – a Geometrical View
https://www.researchgate.net/profile/Luis-Teia/publication/312607399_Fermat's_Theorem_-_a_Geometrical_View/links/58863f6d92851c21ff4d5825/Fermats-Theorem-a-Geometrical-View.pdf

Heavenly Mathematics The Forgotten Art of Spherical Trigonometry - Glen Van Brummelen
<https://www.amazon.com/Heavenly-Mathematics-Forgotten-Spherical-Trigonometry/dp/0691175993>

The Theorem of Trithagoras; Pythagoras is for Squares - Dave Mitchell - <https://latticelabyrinths.wordpress.com/2018/01/13/the-theorem-of-trithagoras-pythagoras-is-for-squares-the-mathsjam-2017-five-minute-presentation/>
Pythagoras theorem variation - Claudi Alsina - <http://claudialsina.com/wp-content/uploads/2016/10/newpythlikethms.pdf>
Extended Pythagoras Theorem Using Hexagons - Luis Teia
https://www.researchgate.net/publication/356441337_Extended_Pythagoras_Theorem_Using_Hexagons
Extended Pythagoras Theorem using Triangles, and its Applications to Engineering - Luis Teia
https://www.researchgate.net/publication/357896374_Extended_Pythagoras_Theorem_using_Triangles_and_its_Applications_to_Engineering

Duocode, a parallel of the unicode standard for hexagonal typesetting - Alexander Egorov

Hex Grid Geometry for Game Developers - Herman Tulleken - <http://gamelogic.co.za/downloads/HexMath2.pdf>
'Tetrahedral' coordinates in space (generalization of hexagonal coordinates)

<https://math.stackexchange.com/questions/1861635/tetrahedral-coordinates-in-space-generalization-of-hexagonal-coordinates>
Topology Optimization with Tetra-kai-decahedra and Spheroidal Masks - Nikhil Singh and Anupam Saxena
https://www.researchgate.net/publication/358345870_Topology_Optimization_with_Tetra-kai-decahedra_and_Spheroidal_Masks

An Argument For Dozenalism - <https://hexnet.org/content/argument-dozenalism>
<https://hexagon.link/> && <https://hexagontruth.github.io/hexular/> && <https://twitter.com/hexagonalnews>
Hexagonal Awareness - <https://www.youtube.com/channel/UCf-ml0bmw7OJZHZCIB0cx3g/videos>

Polynumbers, Norms, Metrics, and Polyangles - R R Aidagulov and M V Shamolin
https://www.researchgate.net/publication/270597014_Polynumbers_Norms_Metrics_and_Polyangles
Finsler Spaces, Bingles, Polyangles, and Their Symmetry Groups - R. R. Aidagulov and Maxim V. Shamolin
https://www.researchgate.net/publication/270597384_Finsler_Spaces_Bingles_Polyangles_and_Their_Symmetry_Groups

Taxicab Angles and Trigonometry - Kevin Thompson and Tevian Dray - <https://arxiv.org/pdf/1101.2917.pdf>

Divine Proportions: Rational Trigonometry to Universal Geometry - Norman J. Wildberger
<https://www.amazon.com/Divine-Proportions-Rational-Trigonometry-Universal/dp/097574920X>
Wildberger 's channel - <https://www.youtube.com/user/njwildberger>
Rational trigonometry - https://handwiki.org/wiki/Rational_trigonometry

Pascal simplex - https://en.wikipedia.org/wiki/Pascal's_simplex

Using Chinese Dumbass Notation to Find Algebraic Identities Daniel - Liu Daniel Liu
https://www.academia.edu/11576181/Using_Chinese_Dumbass_Notation_to_Find_Algebraic_Identities

Introduction to the General Trigonometry in Euclidian 2D-space - Claude Ziad Bayeh
<http://www.wseas.us/e-library/transactions/mathematics/2012/53-882.pdf>

Plimpton 322 is Babylonian exact sexagesimal trigonometry - Daniel Francis Mansfield and Norman Wildberger
https://www.researchgate.net/publication/319286288_Plimpton_322_is_Babylonian_exact_sexagesimal_trigonometry
Old Babylonian mathematics and Plimpton 322: A new understanding of the OB tablet Plimpton 322
<https://www.youtube.com/watch?v=L24GzTaOll0>

(6) SOFTWARE ZONE

DATA STRUCTURES*

Treesheet (tree-like spreadsheet) - <http://strlen.com/treesheets/>
Blockchain (demo) - <https://andersbrownworth.com/blockchain/>
Heimer (mind map) - <https://github.com/juzzlin/Heimer>
DAS-UI <https://das-ui.firebaseio.com/> && <https://szymonkaliski.com/writing/2017-09-08-building-das-ui/>
Enso (diagrammatic coding) - <https://enso.org/language>
Orca (procedural sequencers) - <https://github.com/Hundredrabbits/Orca>
Taichi (spatially sparse multi-level data structures) - <https://github.com/taichi-dev/taichi>
Rasdaman (datacube and arrays) - <http://www.rasdaman.org/wiki>
Categorical Data (data-related tasks using category theory) - <https://www.categoricaldata.net/>
Egison (efficient non-linear pattern matching with backtracking for non-free data type) - <https://www.egison.org/>
Eve (uniform data-processing) - <http://witheve.com/>
Fluidinfo (columnar shareable data) - <https://github.com/fluidinfo> && <https://en.wikipedia.org/wiki/Fluidinfo>
MentDB (world wide Data) - https://www.mentdb.org/mentdb_weak.html

STRUCTS* WITH META

Bedrock (meta-distro) <https://bedrocklinux.org/>
Funtoo (meta-distro) - <https://www.funtoo.org/Welcome>
T2 System Development Environment (meta-distro) - <https://t2sde.org/index.cgi/>
DL Linux (meta-meta-distro) - <https://web.archive.org/web/20181221164035/https://www.sudosatirical.com/articles/dl-linux-0-0-1-released/>
Black (reflective) - <http://pllab.is.ocha.ac.jp/~asai/Black/>
Terra (meta-programming) - <http://terralang.org/>
MetaL (meta-language) - <https://www.meta-language.net/faq.html#what>
Rinci (metadata specifications) - <https://metacpan.org/pod/Rinci#ABSTRACT>
Circle (meta-programming) - <https://www.circle-lang.org/>
Hackett (meta-programming) - <https://lexi-lambda.github.io/hackett/>
Elena (polymorphic code) - <https://github.com/ELENA-LANG/elena-lang/wiki/ELENA-Programming-Manual#overview>
Beluga (mechanizing meta-theory) - <https://www.cs.mcgill.ca/~complogic/beluga/index.html>
Hazel (incomplete programs) - <https://hazel.org/>
Autohotkey (gui and scripting automation for windows) - <https://www.autohotkey.com/>

Rosie Pattern (beyond regex) - <https://rosie-lang.org/about/>
Antipurity (self-aware interpreter) - <https://github.com/Antipurity/conceptual>
Multicompiler (defensive compiler) - <https://immunant.com/blog/2018/09/multicompiler/>
Avail (articulate programming) - <https://www.availlang.org/about-avail/introduction/index.html>
Push (evolutionary computing) - <https://faculty.hampshire.edu/lspector/push.html>
Wyvern (built-in skill for large-scale design) - <https://wyvernlang.github.io/>
Gen (probabilistic) - <https://probcomp.github.io/Gen/>
Pyro (probabilistic) - <https://pyro.ai/>
Rascal (meta-programming) - <https://www.rascal-mpl.org/>
Pharo (software as objects, immersive) - <https://pharo.org/features>

SOUND*

Gwion - <https://gwion.github.io/Gwion/>
Kronos vesaronilo - <http://kronos.vesaronilo.com/>
Supercollider - <https://supercollider.github.io/>
Faust - <https://faust.grame.fr/>
Chuck - <http://chuck.cs.princeton.edu/>

NETWORKING*

Live Raizo (network simulation) - <https://sourceforge.net/projects/live-raizo/>
P4 (implement specific network behaviours) - <https://p4.org/>
Helena (browsing automation) - <https://helena-lang.org/>
Volunia (rpg-like browser) <http://www.volunia.com/>
Gather (rpg-like meetings) - <https://www.gather.town/>
Lynx (textual browser) - [https://en.wikipedia.org/wiki/Lynx_\(web_browser\)](https://en.wikipedia.org/wiki/Lynx_(web_browser))
Beaker Browser (peer-to-peer Web browser) - <https://beakerbrowser.com/>
Nyx browser (keyboard-driven browser) - <https://github.com/atlas-engineer/next>
Jolie (microservices) - <https://www.jolie-lang.org/>
Daphile (headless music server) - <https://www.daphile.com/>
Skywave linux (software defined radio servers) - <https://skywavelinux.com/>
Gotenna (off-grid mobile mesh) - <https://gotenna.com/>
Manyverse (off-grid social networking) - <https://www.manyverse.se/faq/what-is-manyverse>
p2p networking - <https://www.gnunet.org/en/> <https://zeronet.io/> <https://freenetproject.org/>
Eternal-september private news server (usenet) - <http://eternal-september.org/>
Aioe.org public news server (usenet) - <https://news.aioe.org/>
What is the Usenet improvement Project? - <http://twovoyagers.com/improve-usenet.org/>
Fediverse (federated servers for web-publishing) - <https://en.wikipedia.org/wiki/Fediverse>

OPERATING SYSTEM*

XOD.IO (microcontrollers) - <https://xod.io/>
Elemental Processor SIMulator - <https://wepsim.github.io/>
Mikrocodesimulator MikroSim 2010 (microcode) - http://www.mikrocodesimulator.de/index_eng.php
Katai Struct (binary data structures) - <https://kaitai.io/>
Snowdrop OS (16-Bit Operating System) - <http://sebastianmihai.com/snowdrop/>
Turbo Rascal (design of 8-bit/16-bit games) - <https://lemonspawn.com/turbo-rascal-syntax-error-expected-but-begin/>
Tunguska (a ternary computer emulator) - Viktor Lofgren - <http://tunguska.sourceforge.net/>
The Trillium Architecture - Douglas W. Jones - <http://homepage.divms.uiowa.edu/~jones/ternary/trillium.shtml>
Red (full-stack) - <https://www.red-lang.org/p/about.html>
Racket - <https://racket-lang.org/> && Neverlang - <https://cazzola.di.unimi.it/neverlang2.html> (language creation)
Rescatux - <https://www.supergrubdisk.org/rescatux/> && Parted Magic - <https://partedmagic.com/> (OSes for rescue and recovery)
Minix - <https://www.minix3.org/> && 'An Open Letter to Intel' - <https://www.cs.vu.nl/~ast/intel/>
Los Procesadores Intel tienen un Secreto Misterio - <https://www.youtube.com/watch?v=CaLb7waR6eo>
Debian-hurd (debian over Hurd) - <https://www.debian.org/ports/hurd/> https://en.wikipedia.org/wiki/GNU_Hurd
Trisquel (ubuntu over Libre-Linux) - <https://trisquel.info/>
Ratpoison (Window Manager) - <https://www.nongnu.org/ratpoison/>
IceWM (Window Manager) - <https://ice-wm.org/>
RedoxOS - <https://doc.redox-os.org/book/ch01-06-how-redox-compares.html>
Linux From Scratch! - <https://www.linuxfromscratch.org/>

LANGUAGE*

Sono (linguistic study) - <https://github.com/Nallantli/Sono>
Quorum (evidence-oriented) - <https://quorumlanguage.com/reference.html>
Inform7 (interactive narrative, textual adventures) - <http://inform7.com/>
Poliqarp (universal concordancer for large corpora) - <http://poliqarp.sourceforge.net/about.html>
Paper generator - https://en.wikipedia.org/wiki/Paper_generator

GRAPHICS*

Curv (mathematical methods for art design)- <https://github.com/curv3d/curv>
GraRLS (static graphic images) - <http://www.grarls.org/>
KUIML (skin and GUI) - <https://www.bluecataudio.com/Vault/Skins/KUIML/>
Complexities of Color in Computing - Ellen Wondra - <https://www.youtube.com/watch?v=VCvOwoeOgv8>
Dr Huang 's Math Handbook Calculator - <http://drhuang.com/> && <http://drhuang.com/science/mathematics/software/>
Draw2D (diagrams) - <http://www.draw2d.org/draw2d/examples.html>
Threejs (creation of 3D content) - <https://threejs.org/manual/#en/fundamentals>
Video (video editing) - <https://lang.video/>

(7) CYBERNETICS

The Cybernetic Foundation of Mathematics (Semantic graphs and Labeling rules at pages 118 - 121)
https://pat.keldysh.ru/~roman/doc/Turchin/1983_Turchin_The_Cybernetic_Foundation_of_Mathematics.pdf
Valentin Turchin - <https://pat.keldysh.ru/~roman/doc/Turchin/>

Diagnosing the System for Organizations - Stafford Beer
<https://www.amazon.com/Diagnosing-System-Organizations-Stafford-Beer/dp/0471951366>
Beyond Dispute: The Invention of Team Syntegrity
<https://www.amazon.com/Beyond-Dispute-Invention-Team-Syntegrity/dp/0471944513>
Viable system model - https://en.wikipedia.org/wiki/Viable_system_model
How Many Grapes Went Into the Wine - Stafford Beer (see chapter 'The Irrelevance of Automation')
<https://www.amazon.com/Many-Grapes-Went-into-Wine/dp/0471942960>

Cybersyn - <http://www.cybersyn.cl/> && <http://wiki.p2pfoundation.net/Cybersyn>
'Chile Secreto Capítulo 3 : Proyecto Cybersyn' - <https://www.youtube.com/watch?v=4cK7RRH2dX0>

Homeostat - <http://pespmc1.vub.ac.be/ASC/HOMEOSTAT.html> && Variety - [https://en.wikipedia.org/wiki/Variety_\(cybernetics\)](https://en.wikipedia.org/wiki/Variety_(cybernetics))

Engineering cybernetics: 60 years in the making - Zhiqiang Gao
https://www.researchgate.net/publication/271917376_Engineering_cybernetics_60_years_in_the_making
Engineering Cybernetics - Hsue-Shen Tsien [Qian Xuesen] - <https://babel.hathitrust.org/cgi/pt?id=uc1.b3734950&view=1up&seq=7>
Man-Machine-Environment System Engineering Proceedings of the 17th International Conference on MMESE - S. Long and B. Dhillon

The energy evolution - <https://www.amazon.com/Energy-Evolution-Schaubergers-Eco-technology-Schauberger/dp/B00IGYQ24U>
The Fertile Earth - <https://www.amazon.com/Fertile-Earth-Agriculture-Fertilisation-Ecotechnology/dp/B01FGORR8M>

Cypherpunk - <https://en.wikipedia.org/wiki/Cypherpunk>

Plexil (robotics and systems) - <http://plexil.sourceforge.net/wiki/index.php/Overview>
Modelica (language for modeling of cyber-physical systems) - <https://modelica.org/modelicalanguage.html>

Resource Based Economy - https://www.youtube.com/watch?v=_EkMjTnWk14 && <https://www.resourcebasedeconomy.org/>
Center for Resource Management - <https://www.thevenusproject.com/center-for-resource-management/>
Self Erecting Structures - <https://www.youtube.com/watch?v=CM8bNZTvX3A>
Comparison with current technologies - <https://www.youtube.com/watch?v=T9c821s9mjw>
RBE TVP research center mix - <https://www.youtube.com/watch?v=Jy967Y0OsWY>

Destiny and Control in Human Systems Studies in the Interactive Connectedness of Time - Charles Muses
<https://www.amazon.co.uk/Destiny-control-human-systems-chronotopology/dp/157898727X>
SUPL (Syntactic Universal Programming Language): a new dimension in software design and artificial intelligence
How to make a stupid machine clever by cybernetically opportunistic programming
Cybernetics today and tomorrow: The place of hypernumbers

(8) NUMERALS ON CONSCIOUSNESS

Cognitive-Theoretic Model of the Universe (CTMU) - Christopher Langan - <http://hology.org/>
Chris Langan on IQ, The Singularity, Free Will, Psychedelics, CTMU, and God - <https://www.youtube.com/watch?v=N-bRM1kYuNA>
CTMU Wiki - <https://ctmucommunity.org/wiki/> && CTMU Papers <http://hology.org/ctmu-papers/>
Interview of Langan by Michael Knowles - <https://www.youtube.com/watch?v=11-ckSz6FrQ>
Chris Langan A Kastrup on Consciousness, Metaphysics, Computation, and God - <https://www.youtube.com/watch?v=HsXxgQy4xLQ>

International Journal of Mathematics and Consciousness - <http://www.ijmac.com/papers>
Consciousness Is All There Is: A Mathematical Approach with Applications - Tony Nader

<http://www.ijmac.com/wp-content/uploads/2015/12/all05.pdf>

Glasgow_Coma_Scale - https://en.wikipedia.org/wiki/Glasgow_Coma_Scale#Scoring

Levels of consciousness - https://en.wikipedia.org/wiki/Altered_level_of_consciousness#Definition

Strange loop - https://en.wikipedia.org/wiki/Strange_loop

I Am a Strange Loop - Douglas R. Hofstadter - <https://www.amazon.com/Am-Strange-Loop-Douglas-Hofstadter-ebook/dp/B004PYDBSO>

Psychedelic Information Theory: Shamanism in the Age of Reason - James L. Kent

<https://www.amazon.com/Psychedelic-Information-Theory-Shamanism-Reason/dp/1453760172>

Geometry of Trips - <https://psychonautwiki.org/wiki/Geometry>

Polynomial Root-finding and Polynomiography - Bhaman Kalantari (see section 'Polynomiography based on Voronoi coloring')

<https://www.amazon.com/Polynomial-Root-finding-Polynomiography-Bahman-Kalantari/dp/9812700595>

Pascalejandro – Alejandro Jodorowsky and Pascal Montandon - <http://pascalemontandon.com/albums-work/pascalejandro/>

(9) BEYOND COMPLEX NUMBERS AND THE PLANE

Dual Quaternion - https://en.wikipedia.org/wiki/Dual_quaternion

Truly hypocomplex numbers : Unification of numbers and vectors - Redouane Bouhennache - <https://arxiv.org/pdf/1409.2757.pdf>

On a novel 3D hypercomplex number system - Shlomo Jacobi - <https://arxiv.org/pdf/1509.01459.pdf>

Generalizaciones de los números: de la aritmética a las variedades diferenciables - Fernando Etayo Gordejuela

<https://repositorio.unican.es/xmlui/bitstream/handle/10902/13817/2016GacRSocMatEspGeneralization.pdf?sequence=1&isAllowed=y>

Ensemble de nombres - Taladris, Silk78, Seirios, Telchar, Tigerfou and Médiat - <https://forums.futura-sciences.com/mathematiques/>

NOMBRES : CURIOSITÉS, THÉORIE, USAGE - Gérard Villemin - <http://villemin.gerard.free.fr/>

Theory of 3D complex space and complex number of 3D space, applications and experimental validation techniques - L.T. Abobda

https://www.researchgate.net/publication/301627462_Theory_of_3D_complex_space_and_complex_number_of_3D_space_applications_and_experimental_validation_techniques

Understanding & Using "nuReal numbers" 6.0 - John A. Shuster

https://www.researchgate.net/publication/362850567_Understanding_Using_nuReal_Numbers

Hoop Algebras - Roger Beresford (orthogonal roots of unity, conjugates and signs distinct of the usual cyclotomic machinery)

Hoop Algebras and Physics - https://library.wolfram.com/infocenter/MathSource/6198/Hoops&Physics.doc?file_id=6093

Hoop Algebra Supplement - https://library.wolfram.com/infocenter/MathSource/6198/HoopAlgebraSupplement.doc?file_id=6092

Wolfram library of Roger - <https://library.wolfram.com/infocenter/MathSource/6198/>

Wolfram demos of Roger - <https://demonstrations.wolfram.com/author.html?author=Roger+Beresford>

https://library.wolfram.com/infocenter/search/?search_results=1&search_person_id=4705

Algebraic loop - <https://mathworld.wolfram.com/AlgebraicLoop.html>

Moufang loop - https://groupprops.subwiki.org/wiki/Moufang_loop

Reinko Venema's blog about 3d numbers and miscellaneous topics - <http://3dcomplexnumbers.net/>

On the Extension of Complex Numbers - Nicholas Gauguin Houghton-Larsen

<https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.304.5052&rep=rep1&type=pdf>

Hypercomplex number in three dimensional spaces - Abdelkarim Assoul

https://www.researchgate.net/publication/308969073_Hypercomplex_number_in_three_dimensional_spaces_hal-01686021

Solving Quaternion Quadratic Equations - Peter Michael Jack <https://archive.org/details/q2wp01>

A System of Three-Dimensional complex variables - E. Dale Martin

<https://ntrs.nasa.gov/archive/nasa/casi.ntrs.nasa.gov/19880004569.pdf>

An algorithm for multiplication of trigtaduonions – Alexandr Cariow and Galina Cariowa

<https://pdfs.semanticscholar.org/2a77/5a4f39ba0a0d1ceb34b3e0a1c2223117d680.pdf>

Quixal Quixotic algebra v0.1.4 (OpenCL library) - Jens Koeplinger - <https://bitbucket.org/jenskoeplinger/quixal/src/master/>

Foundations of transcomplex numbers An extension of the complex number system to four dimensions - Perez Ernesto

Circular and Hyperbolic Quaternions, Octonions, and Sedenions - Kevin Carmody
<https://www.sciencedirect.com/science/article/abs/pii/S0096300388901336>

A complex and Triplex framework for encoding the riemannian dual space-time topology equipped with order parameters fields - N. O. Schmidt
https://www.researchgate.net/publication/236735724_A_complex_and_triplex_framework_for_encoding_the_Riemannian_dual_space-time_topology_equipped_with_order_parameter_fields

Nonions - James Joseph Sylvester (at "A Synopsis of Linear Associative Algebra - James Byrnie Shaw")
<https://babel.hathitrust.org/cgi/pt?id=coo.31924062544949&view=1up&seq=97>

Vector algebra relations - https://en.wikipedia.org/wiki/Vector_algebra_relations
Paravector - <https://en.wikipedia.org/wiki/Paravector>
Multivector - <https://en.wikipedia.org/wiki/Multivector>
Pseudo-vector - <https://en.wikipedia.org/wiki/Pseudovector>
Pseudo-scalar - <https://en.wikipedia.org/wiki/Pseudoscalar>
Pseudotensor - <https://en.wikipedia.org/wiki/Pseudotensor>

Finite neutrosophic complex numbers. - F. Smarandache and W.B. Vasantha Kandasamy - https://digitalrepository.unm.edu/math_fsp/147/

A Three Dimensional Coordinate System for Complex Numbers - Greg Ehmka - <http://gregehmk.com/math-ebook>

Complex Numbers The Higher Dimensional Forms 2nd Edition - Dennis Morris
https://www.amazon.com/gp/product/1508677492/ref=dbs_a_def_rwt_bibl_vppi_i16

Hypercomplex Numbers in Geometry and Physics (Scientific Journal)
<https://web.archive.org/web/20210621004145/https://hypercomplex.xpsweb.com/section.php?lang=en&genre=3>
<https://www.scribd.com/document/35133746/Hyper-Complex-Numbers-in-Geometry-and-Physics>

Laguerre plane - https://en.wikipedia.org/wiki/Laguerre_plane
Note sur la théorie des foyers - Edmond Laguerre - http://www.numdam.org/item/NAM_1853_1_12_57_0.pdf (version of 1853)

Plücker coordinates - https://en.wikipedia.org/wiki/Pl%C3%BCcker_coordinates

Semi-Complex Analysis & Mathematical Physics - F. Antonuccio - <https://arxiv.org/pdf/gr-qc/9311032.pdf>

OMIC's N-nion's site - anonymous author - <http://asynbrain.baf.cz/m/nt/index.htm>
The trinion Fourier transform of color images - Dawit Assefa, Lalu Mansinha, Kristy F. Tiampo, Henning Rasmussen and Kenzu Abdella
https://www.academia.edu/3835064/The_trinion_Fourier_transform_of_color_images
Three-Dimensional Wind Profile Prediction with Trinion-Valued Adaptive Algorithms Zhi Wen Liu, Wei Liu and You Gen Xu
https://www.researchgate.net/publication/278048724_Three-Dimensional_Wind_Profile_Prediction_with_Trinion-Valued_Adaptive_Algorithms

Periodic Table of Geometric Numbers - Garret Sobczyk - <https://arxiv.org/pdf/2003.07159v1.pdf>
Garret Sobczyk's homepage - <https://garretstar.com/>
New Foundations in Mathematics The Geometric Concept of Number
<https://www.amazon.com/New-Foundations-Mathematics-Geometric-Concept/dp/0817683844>
<https://www.youtube.com/user/BillPageAtHome/videos>

Classical Hamiltonian quaternions - https://en.wikipedia.org/wiki/Classical_Hamiltonian_quaternions

Ternary numbers and algebras - Alexey Dubrovski and Guennadi Volkov - <https://arxiv.org/pdf/hep-th/0608073.pdf>

Extending complex number to spaces with 3, 4 or any number of dimensions - Kuan Peng
<https://pengkuanonmaths.blogspot.com/2022/02/extending-complex-number-to-spaces-with.html>

Teoría de los números ultracomplejos - Miguel Ángel Bernáldez
<https://foro.rinconmatematico.com/index.php?action=dlattach;topic=121126.0;attach=25790>

"Quaternions - Redundancy + Efficiency = Ternions" - Ulrich Mutze - <http://www.ulrichmutze.de/articles/05-53.pdf>

Geometry of Generalized Complex Numbers - Anthony Harkin and Joseph B. Harkin
https://www.researchgate.net/publication/265769569_Geometry_of_Generalized_Complex_Numbers

Back to the Roots of Vector and Tensor Calculus. Heaviside versus Gibbs - Alessio Rocci - <https://arxiv.org/pdf/2010.09679.pdf>

The sextonions and E - Landsberg, J. M., & Manivel, L. - <https://arxiv.org/pdf/math/0402157.pdf>

Sextonions, Zorn Matrices, and $E^{7\frac{1}{2}}$ - <https://arxiv.org/abs/1506.04604v1> && $E^{7\frac{1}{2}}$ - <https://en.wikipedia.org/wiki/E7%C2%BD>

Sextonions and the magic square - Bruce W. Westbury - <https://arxiv.org/abs/math/0411428>

Dual-complex number - https://en.wikipedia.org/wiki/Dual-complex_number

The Development of Hyper-Dual Numbers for Exact Second-Derivative Calculations - Jeffrey A. Fike and Juan J. Alonso

http://adl.stanford.edu/hyperdual/Fike_AIAA-2011-886_slides.pdf

N-dimensional complex numbers - <http://www.alenspage.net/ComplexNumbers.htm>

M.E. Irizarry-Gelpí - <https://meirizarrygelpi.github.io/posts/math/beyond-complex/index.html>

<https://godoc.org/github.com/meirizarrygelpi/rational>

Back to the Roots of Vector and Tensor Calculus. Heaviside versus Gibbs. - Alessio Rocci - <https://arxiv.org/pdf/2010.09679.pdf>

The vector algebra war: a historical perspective - James M. Chappell, Azhar Iqbal, John G. Hartnett and Derek Abbott

<https://arxiv.org/pdf/1509.00501.pdf>

The simple complex numbers - Jaroslaw Zalesny - <https://arxiv.org/abs/0802.0312>

Musean hypernumbers - <http://www.house-of-horus.de/hypernumbers.html>

<https://en.wikipedia.org/w/index.php?title=Hypernumber&oldid=78200756>

<https://plus.wikimonde.com/wiki/Hypernombre>

Elliptic complex numbers with dual multiplication - John Shuster and Jens Koplinger

http://www.jenskoepflinger.com/P/PaperShusterKoepl_WSpace.pdf

Doubly nilpotent numbers in the 2D plane - John Shuster and Jens Koplinger

<http://www.jenskoepflinger.com/P/PaperShusterKoepl-PQSpace.pdf>

Unipolar/Bipolar Cassinoidal Complex Numbers - John Shuster

https://www.researchgate.net/publication/362964583_UnipolarBipolar_Cassinoidal_Complex_NosM_space

Lambda spaces (Λ , Ω^*) based on Cornu (& other) spirals - III - John Shuster

https://www.researchgate.net/publication/362964525_Re-definitions_of_Muses'_Omega_numbers

(10) FOUNDATIONAL OR ABSTRACT TOPICS

Iconic Arithmetic - William Bricken - <http://iconicmath.com/>

<https://archive.org/details/iconicarithmetic01will/mode/2up>

James Imaginary - <http://iconicmath.com/algebra/jimaginary/>

The Curious Dependence of Set Theory on Order Theory - Tom Leinster

https://golem.ph.utexas.edu/category/2012/10/the_curious_dependence_of_set.html

Category theory vs Order theory - <https://ncatlab.org/nlab/show/category+theory+vs+order+theory>

MIX (hypothetical computer featured in TAOCP) - <https://en.wikipedia.org/wiki/MIX>

Proofs from THE BOOK - Martin Aigner and Günter M. Ziegler

<https://www.amazon.com/Proofs-BOOK-Martin-Aigner/dp/3662495929>

On the Shape of Mathematical Arguments - A.J.M. van Gasteren

<https://www.amazon.com/Mathematical-Arguments-Lecture-Computer-Science/dp/3540528490>

Charming Proofs A Journey into Elegant Mathematics - Claudi Alsina and Roger B. Nelsen

<https://www.amazon.in/Charming-Proofs-Mathematics-Mathematical-Expositions/dp/0883853485>

The Literal Calculus of Viète and Descartes - I. G. Bashmakova and G. S. Smirnova

<https://historiamatecuaciones.files.wordpress.com/2012/07/the-literal-calculus-of-viete-and-descartes.pdf>

The Book First of Descartes's Geometry - André Warusfel

http://www.bibnum.education.fr/sites/default/files/46_descartes-analysis.pdf

The eightfold path to nonstandard analysis - Vieri Benci, Mauro Di Nasso and Marco Forti

https://www.researchgate.net/profile/Vieri_Benci/publication/228753190_The_eightfold_path_to_nonstandard_analysis/links/0deec52e248b66edc1000000/The-eightfold-path-to-nonstandard-analysis.pdf

An Invitation to Higher Arity Science - Carlos Zapata-Carratala and Xerxes D. Arsiwalla - <https://arxiv.org/pdf/2201.09738.pdf>

Mathematics Without Numbers Towards a Modal-Structural Interpretation - Geoffrey Hellman

<https://www.amazon.com/Mathematics-without-Numbers-Modal-Structural-Interpretation/dp/0198240341>

Science Without Numbers A Defense of Nominalism - Hartry Field
<https://www.amazon.com/Science-without-Numbers-Hartry-Field/dp/0198777922>

Physics, Topology, Logic and Computation: A Rosetta Stone - John Baez and Mike Stay - <https://arxiv.org/pdf/0903.0340.pdf>
Symmetric Monoidal Categories: a Rosetta Stone (slides) - https://math.ucr.edu/home/baez/rosetta/rosetta_topos_web.pdf
Conference - <https://www.youtube.com/watch?v=DAGJw7YBy8E>
Network Theory - <https://math.ucr.edu/home/baez/networks/>

Danomatics (DC Proof 2.0) - Dan Christensen - <http://www.dproof.com> && <http://www.dproof.wordpress.com>

Dogelog - XLOG Technologies AG - <http://www.xlog.ch/> && <https://twitter.com/dogelogch/>
http://www.xlog.ch/izytab/doclet/en/docs/01_welcome/package.jsp

Abelian and Nonabelian Mathematics - I. R. Shafarevich - <https://link.springer.com/article/10.1007/BF03024075>

Numeristics - Kevin Carmody - <https://kevincarmody.com/math/numeristics.pdf>

Real Computation - https://en.wikipedia.org/wiki/Real_computation
Hypercomputation - <https://en.wikipedia.org/wiki/Hypercomputation>
Unconventional computing (list) - https://en.wikipedia.org/wiki/Unconventional_computing

Partial Boolean algebras and the logical exclusivity principle - Samson Abramsky and Rui Soares Barbosa
<https://wdi.centralesupelec.fr/users/valiron/qplmfps/papers/qs08t2.pdf>

Exotic Set theory whose elements have Poly-membership - https://en.wikipedia.org/wiki/Ant_colony#Organizational_terminology
Supercolonies - <https://www.antwiki.org/wiki/Supercolonies>

Doxastic logic - https://en.wikipedia.org/wiki/Doxastic_logic

Heteromorphism - <https://ncatlab.org/nlab/show/heteromorphism>
The Heteromorphism in Category Theory - Christian Williams - <https://oaktrust.library.tamu.edu/handle/1969.1/177588>
On Self-Predicative Universals in Category Theory - David Ellerman (The Joy of Hets) - <https://arxiv.org/pdf/1405.3192.pdf>

Cryptomorphism - <https://en.wikipedia.org/wiki/Cryptomorphism>

Halting problem undecidability and infinitely nested simulation (V5) - Pete Olcott
https://www.researchgate.net/publication/359984584_Halting_problem_undecidability_and_infinitely_nested_simulation_V5
Formalizing the logical (self-reference) error of the Liar Paradox - Pete Olcott
https://www.researchgate.net/publication/307442489_Formalizing_the_logical_self-reference_error_of_the_Liar_Paradox

Surfaces and Essences: Analogy as the Fuel and Fire of Thinking - Douglas R. Hofstadter
https://www.amazon.com/gp/product/B00BE65086/ref=dbs_a_def_rwt_hsch_vapi_tkin_p1_i2

Matemática Discreta Isodimensional - <http://www.isodimensional.org/>

Alternative models of the real number line in physics - D. K. Ross - <https://link.springer.com/article/10.1007/BF02213428>
Can There Be an Alternative Mathematics, Really? - Jean Paul Van Bendegem - https://link.springer.com/chapter/10.1007%2F0-387-24270-8_30

How Much Mathematics Is “Hardwired” If Any at All - Rafael Núñez
https://cogsci.ucsd.edu/~nunez/COGS152_Readings/Nunez_ch3_MN.pdf

Non-well-founded set theory - https://en.wikipedia.org/wiki/Non-well-founded_set_theory
Abstract nonsense - https://en.wikipedia.org/wiki/Abstract_nonsense
Paraconsistent logic - https://en.wikipedia.org/wiki/Paraconsistent_logic

Binary Relations as a Foundation of Mathematics - Jan Kuper
https://www.academia.edu/48735715/Binary_Relations_as_a_Foundation_of_Mathematics

New Calculus - John Gabriel - <http://thenewcalculus.weebly.com/>
(study and continuation of the greek knowledge, free of equivalence classes)
https://www.youtube.com/channel/UCIBbBVLs3M-d3dNgU4Vop_A/videos
<https://www.gofundme.com/f/save-the-most-persecuted-mathematician>
Theory of Fractions - https://www.academia.edu/69488136/Theory_of_fractions_from_Book_5_of_Elements_for_Dummies
<https://independent.academia.edu/JohnGabriel30>
<https://www.youtube.com/c/DimitriosMourmouras>

Questioning fictions in mathematics - Bassam Karzeddin - <https://twitter.com/karzeddin>
First world war against mathematicians - <https://groups.google.com/g/sci.math/c/lHUIQjzIKt4/m/UUsIQ2moAQAJ>

Transfinity A Source Book - Wolfgang Mückenheim - <https://www.hs-augsburg.de/~mueckenh/Transfinity/Transfinity/pdf>
The ultimate proof of dark numbers - <https://groups.google.com/g/sci.math/c/Q5SYDOF5nOg>
Dark numbers - https://www.academia.edu/44503118/Dark_Numbers
ANT LIST V 6.0 - Sergio - <https://groups.google.com/g/sci.math/c/me0bAoOloMl/m/teJ7j9oDAgAJ>

TURBO PROLOG - Graham Cooper - <https://www.turboprolog.com/> && <https://groups.google.com/g/sci.logic/c/fHIDCF9omJU>
Classes of powerset functions and tri-state membership - Graham Cooper - <https://www.phpprolog.com/powerclass.png>
<https://groups.google.com/g/sci.math/c/R-7URWSbmsA/m/1fknJ9gBAQAJ>

Mathematics of Archimedes Plutonium - <https://groups.google.com/forum/?hl=en#!forum/plutonium-atom-universe>
List of 76 fakes and mistakes of Old Math - https://groups.google.com/g/sci.math/c/_wQVjEMm_fM/m/YhcrB3jVBAAJ
"Archimedes Plutonium" - Ramona Falls - <https://www.youtube.com/watch?v=z43ClZS-um4>
https://www.amazon.com/Archimedes-Plutonium/e/B089QBZX8W?ref=sr_ntt_srch_lnk_3&sr=8-3

My Math, James Harris (blog) - <https://web.archive.org/web/20110928215006/http://mymath.blogspot.com/>
Collections of James Harris - <https://hismath.blogspot.com/2009/02/>

Andre Joyce 's web - http://untilheaven.tripod.com/transfinite_mathematics_made_easy.htm
http://untilheaven.tripod.com/andre_joyce_s_coined_words.htm

Also visit <https://archive.org/download/usenet-sci/> or <https://archive.org/details/usenethistoricalsome>

(11) ABOUT MATHEMATICS

Crank Dot Net - List of bizarre mathematics - Erik Max Francis – <http://www.crank.net/math.html>

Where is the frontier between Mathematics and pseudo-mathematics"? - <https://en.wikipedia.org/wiki/Pseudomathematics>
Pseudo-mathematics VS Proto-mathematics, can "dissident mathematicians" exist in a similar way to "dissident scientists"?

Worldwide list of dissident scientist
https://www.academia.edu/37679452/Jean_de_Climont_-_The_worldwide_list-of_dissident_scientists_1-500_-_Part_1.pdf

List of topics characterized as pseudoscience - https://en.wikipedia.org/wiki/List_of_topics_characterized_as_pseudoscience

Negapedia - <http://en.negapedia.org/search/?&o=0&c=&q=Mathematics>

The Map of Mathematics - <https://www.youtube.com/watch?v=OmJ-4B-mS-Y> <https://www.flickr.com/photos/95869671@N08/32264483720>

The Most Obvious Secret in Mathematics - Tai-Danae Bradley - <https://www.math3ma.com/blog/the-most-obvious-secret-in-mathematics>

TIB AV Portal - <https://av.tib.eu/> - https://twitter.com/TIB_AVPortal - <https://www.youtube.com/watch?v=CkYC3Lveeo0>
https://www.researchgate.net/publication/280083062_The_TIBAV_Portal_as_a_future_Linked_Media_Ecosystem

(12) GEOMETRICAL

A Mathematical Theory of Origami Constructions and Numbers - Roger C. Alperin - <https://arxiv.org/pdf/math/9912039v1.pdf>
Teoría de Galois tras el Origami - Alberto Garcia Diaz - <https://riull.ull.es/xmlui/bitstream/handle/915/5795/Teoria%20de%20Galois%20tras%20el%20origami.%20Por%20que%20el%20origami%20resuelve%20los%20problemas%20geometricos%20clasicos%20de%20la%20Antigua%20Grecia..pdf?sequence=1&isAllowed=y>

Origami-Constructible Numbers - James King - <https://www.cs.mcgill.ca/~jking/papers/origami.pdf>
Origami and Partial Differential Equations - Bernard Dacorogna, Paolo Marcellini and Emanuele Paolini
https://www.researchgate.net/publication/264962851_Origami_and_Partial_Differential_Equations

The geometry junkyard - David Eppstein - <https://www.ics.uci.edu/~eppstein/junkyard/all.html> (one of the best compilations of internet)

Surprises and pitfalls arising from (pseudo)symmetry - P. H. Zwart, R. W. Grosse-Kunstleve, A. A. Lebedev, G. N. Murshudov and P. D. Adams - <https://journals.iucr.org/d/issues/2008/01/00/ba5111/ba5111.pdf>

Fractals arithmétiques - Jean-Pierre Reveilles - <http://numerisation.univ-irem.fr/ST/IST93018/IST93018.pdf>

Closed spatial p4 struct - Timothy Golden - https://drive.google.com/drive/folders/1xLjsTXOYvHeVau_OCKAHOBZIyps0cRh

Magneto-fractaling - Timothy Golden - https://drive.google.com/file/d/1Vvqq2f_Ch6IozwNimJcS4kw3tnVmtPd/view

List of fractals by Hausdorff dimension https://en.wikipedia.org/wiki/List_of_fractals_by_Hausdorff_dimension

An Intrinsically Three-Dimensional Fractal -- M. Fernández-Guasti
https://www.researchgate.net/publication/267132753_An_Intrinsically_Three-Dimensional_Fractal

Fractal Art of Chris Thomasson - https://www.youtube.com/channel/UC_DhsJu-AbQ6Msnxdf8z6Kg/videos

Geometrical stuff of 1ciekaw - <https://www.youtube.com/user/1ciekaw/videos>

List of Coordinate Systems - https://en.wikipedia.org/wiki/Category:Coordinate_systems
<https://www.gbv.de/dms/goettingen/198419775.pdf>

A Fuller Explanation The Synergetic Geometry of R. Buckminster Fuller - Amy Edmondson
<https://www.amazon.com/Fuller-Explanation-Buckminster-Back-Action-ebook/dp/B002YQ2X5S>
<https://web.archive.org/web/20210410192247/http://www.rwgrayprojects.com/synergetics/s09/p6300.html>
The Tensegrity Wiki - <https://tensegritywiki.com/>

An introduction to the perplex number system - Jerry Chandler - <https://core.ac.uk/download/pdf/81127362.pdf>

Imaginary polyhedral groups and abstract platonic solids beyond the icosahedron - Luigi Tatemira

Three-dimensional Mathematics - Paul D. Katching
Web "3d Math Secrets" (coming soon... ???) - <https://www.3dmathsecrets.com/> <https://www.3dmathsecrets.com/breakthrough>
<https://web.archive.org/web/20220519134749/https://www.3dmathsecrets.com/science>
<https://www.skills31teams.com/about-the-professor> && <https://www.csop.global/about-us>
Conference at Desh Bhagat University - <https://www.youtube.com/watch?v=r6gNfok7A0>
Notes - <https://cdn.website-editor.net/210a0c085d9d48069884380589a8c0ef/files/uploaded/Professor-PDK-Notes.pdf>
Slides - <https://cdn.website-editor.net/210a0c085d9d48069884380589a8c0ef/files/uploaded/1st-Three-Dim-Math-App.pdf>

A space of cyclohedra - Satyan L. Devadoss - <https://arxiv.org/pdf/math/0102166.pdf>

What is Topological Data Analysis? A Primer
https://wiki.structures.mathi.uni-heidelberg.de/index.php/What_is_Topological_Data_Analysis%3F_-_A_Primer

The non-equality between curve and the straight line - Walter Meyer (precedent of a calculus to measure curves and surfaces with balls)
<http://curiosidadesmatematicas.cl/wordpress/aclaracion/https://curiosidadesgeometricas.blogspot.com/2017/>
<http://curiosidadesmatematicas.cl/wordpress/espanol-matematicas/espanol-analisis-de-la-no-igualdad-de-la-curva-y-la-recta-extracto/>
Walter Meyer 's youtube channel - <https://www.youtube.com/user/Curiosidadesgeo/>
The new chilean inch (la nueva pulgada chilena) - <https://curiosidadesgeometricas.blogspot.com/2015/02/>
Bases estructurales para la extension del sistema de medidas - <https://docplayer.es/106649019-Analisis-de-la-no-igualdad-de-la-curva-y-la-recta-bases-estructurales-para-la-extension-del-sistema-de-medidas-autor-walter-enrique-meyer-vergara.html>

Isotropic line - https://en.wikipedia.org/wiki/Isotropic_line
Circular points at infinity - https://en.wikipedia.org/wiki/Circular_points_at_infinity

Generalization of 3D Mandelbrot and Julia sets - Cheng Jin and Tan Jian-rong
<https://www.deepdyve.com/lp/springer-journals/generalization-of-3d-mandelbrot-and-julia-sets-GXA20HCHRA>

Proportion functions in three dimensions - Claudi Alsina and Walter Benz - <https://link.springer.com/article/10.1007/BF01836452>

The mystery of non-Hausdorff manifolds – Samuel Lereah
<https://samuel-lereah.com/articles/Mathematics/the-mystery-of-non-hausdorff-manifolds>

Wedgie of two circles - https://en.wikipedia.org/wiki/Wedgie_sum
<https://i.stack.imgur.com/kYCs0.png>

Dogbone space - https://en.wikipedia.org/wiki/Dogbone_space
https://xorhammer.files.wordpress.com/2010/03/sheaf2_line.png

Reeb foliation - https://en.wikipedia.org/wiki/Reeb_foliation
Lamination - [https://en.wikipedia.org/wiki/Lamination_\(topology\)](https://en.wikipedia.org/wiki/Lamination_(topology))

Experiments in Topology - Stephen Barr - <https://www.amazon.com/Experiments-Topology-Dover-Books-Mathematics/dp/0486259331>

Convex hull - https://en.wikipedia.org/wiki/Convex_hull#Definitions

Fractal dimension and Wada measure revisited : no straightforward relationships in NDDS

Pranas Ziaukas and Minvydas Ragulskis - https://nonlinear.fmf.ktu.lt/Papers/ND_2017_v2.pdf
Lakes of Wada - https://en.wikipedia.org/wiki/Lakes_of_Wada

Three Gears are Possible – Henry Segerman (at Numberphile) - https://www.youtube.com/watch?v=5Mf0JpTI_gg
Segerman 's web - <https://www.shapeways.com/shops/henryseg>

Arindam Banerjee - New Physics - <https://www.youtube.com/watch?v=VA9LUwqMhxY>
<https://www.youtube.com/watch?v=o6pjy0Wvujs>
Introduction to "A New Look Towards the Principles of Motion" -
<https://groups.google.com/d/msg/sci.physics/1wmee5C8mFs/kJMPdnFkAwAJ>
Linear Motion, Momentum, Force, Energy, Internal Force Engines, and the design of Interstellar Spacecraft
<https://groups.google.com/d/msg/sci.physics/GbpQC3a2d1Q/jSXQeb9kAwAJ>
Linear Motion, Momentum, Force, Energy, Internal Force Engines, and the design of Interstellar Spacecraft
<https://groups.google.com/d/msg/sci.physics/P9ZiinIDhHU/ZtMQVyliBQAJ>
The Creation and Destruction of Energy - https://groups.google.com/d/msg/sci.physics/wY6_9V8ucSY/3nnJQk9iBQAJ
The Structure of Heavenly Bodies - <https://groups.google.com/d/msg/sci.physics/8jH-SQIFFDo/O1jn3HpiBQAJ>
The Nature of Explosion - https://groups.google.com/d/msg/sci.physics/7TkOVZigFHg/uv43_aZiBQAJ
Section 5 - <https://groups.google.com/d/msg/sci.physics/jhgcsTq-NrQ/ZBwG8S9jBQAJ>

Bashing Geometry with Complex Numbers, Evan Chen - <https://web.evanchen.cc/handouts/cmplx/en-cmplx.pdf>
Inversive Geometry - Frank Morley and Frank Vigor Morley
<https://www.amazon.com/Inversive-Geometry-Dover-Books-Mathematics/dp/0486493393>

Multistable perception - https://en.wikipedia.org/wiki/Multistable_perception
<https://web.archive.org/web/20220627191031/https://shupliak.art/gallery/hidden-images/four-women>

Hitchhiker Trees - David Greenberg - <https://www.slideshare.net/DavidGreenberg7/hitchhiker-trees-strangeloop-2016>

Tensor Visualisation - Taku Komura - https://www.inf.ed.ac.uk/teaching/courses/vis/lecture_notes/lecture14.pdf

Graph operations - https://en.wikipedia.org/wiki/Graph_operations
https://en.wikipedia.org/wiki/Graph_product#Overview_table
Introduction to Graph and Hypergraph Theory - Vitaly I. Voloshin
<https://www.amazon.com/Introduction-Hypergraph-Theory-Vitaly-Voloshin/dp/1606923722>
Hypergraph - <https://en.wikipedia.org/wiki/Hypergraph>

Visual Encyclopedia of Chemical Engineering Equipment - <https://encyclopedia.che.engin.umich.edu/>
Structural Analysis - https://web.archive.org/web/20190119173057/http://www.engineeringwiki.org/wiki/Structural_Analysis
Mechanical Engineering Lab Equipment - <https://www.engineeringlabsequipment.com/mechanical-engineering-lab-equipment>
OPEN HARDWARE OBSERVATORY - <https://en.oho.wiki/wiki/Home> && <https://en.oho.wiki/wiki/Categories>

Chua's circuit - https://en.wikipedia.org/wiki/Chua's_circuit && De Bruijn graph - https://en.wikipedia.org/wiki/De_Bruijn_graph

Finlaysonian Geometry - Ross A. Finlayson (scattered in many many posts of sci.math and other usenet groups, also accessible through <https://groups.google.com/g/sci.math>, some examples below)

Continuum Analysis Fundamentals (draft) - <https://groups.google.com/g/sci.math/c/Akt1t1NiZlc/m/VkFF9kOdAQAJ>
"Count-ability" of the infinite and cardinals - <https://groups.google.com/g/sci.math/c/EA7YxtWnXMu/m/Kit5rq8ZAwAJ>
A spiral space-filling curve as a natural continuum - <https://groups.google.com/g/sci.math/c/RfVrIC6abDU/m/npx2ce9XAQAJ>
Quadruple primes at infinity - <https://groups.google.com/g/sci.math/c/z5JbZ2j5CnU/m/XUcr41qbCAAJ>
Infinitesimal Probabilities - https://groups.google.com/g/sci.math/c/Gy7XFp_CwII/m/bIZAPkzoAwAJ
Properties of Sweep - <https://groups.google.com/g/sci.math/c/8tPN0adk6fM/m/huzsPYcNFwAJ>
Finlayson's slate - https://groups.google.com/g/sci.math/c/8W5xnFh9y_w/m/UbOicltTDwAJ
A "space" of distributions between the flat and spike (general probabilistic models) - <https://groups.google.com/g/sci.math/c/MZcfZk0-ZnQ/m/se1n4v65DQAJ>

Doubling space - https://en.wikipedia.org/wiki/Doubling_space

Geometric Magic Squares: A Challenging New Twist Using Colored Shapes Instead of Numbers - Lee C.F. Sallows
<https://www.amazon.com/Geometric-Magic-Squares-Challenging-Recreational-ebook/dp/B00GEA9QCS>

Animetadet knots - Grog - <https://www.animatedknots.com/complete-knot-list>
Knot Theory and Its Applications - Kunio Murasugi
<https://www.amazon.com/Applications-Birkh%C3%83%C2%A4user-Classics-Murasugi-2007-10-03/dp/B01A68JA8S>
A Knot-vice's Guide to Untangling Knot Theory - Rebecca Hardenbrook
http://www.math.utah.edu/~rebeccah/A_Knot_vice_s_Guide_to_Untangling_Knot_Theory.pdf

Braid theory - https://encyclopediaofmath.org/wiki/Braid_theory
Knotplot - Robert G. Scharein <https://www.knotplot.com/>
The 85 Ways to Tie a Tie - https://en.wikipedia.org/wiki/The_85_Ways_to_Tie_a_Tie
KnotInfo - <https://knotinfo.math.indiana.edu/> && LinkInfo - <https://linkinfo.math.indiana.edu/index.php>
Knot operation - https://en.wikipedia.org/wiki/Knot_operation
Tangles - Mike Pearson - <https://nrch.maths.org/content/id/5681/Tangles.pdf>
Knotoids, Braidoids and Rail Knotoids - Sofia Lambropoulou - <http://labtd.nsu.ru/6RCCKT/presentations/Lambropoulou.pdf>

Geometría para turistas: Una guía para disfrutar de 125 maravillas mundiales y descubrir muchas más
<https://www.amazon.com/Geometria-para-turistas-CLAUDI-ALSINA/dp/843448806X>

On the art of threesomes - L. Jan Torres - https://archive.org/details/on_the_art_of_threesomes

Textbook of 3-D : Coordinate systems and straight lines - A. K. Sharma

Society's "Ring of Truth" - John A. Shuster - https://www.researchgate.net/publication/363053086_Society's_Ring_of_Truth

OOPArt - https://en.wikipedia.org/wiki/Out-of-place_artifact - Do mathematical OOPArts exist ?

Introduction to the circular number line - Dharmendra Kumar Yadav
https://www.researchgate.net/publication/301552425_INTRODUCTION_OF_A_CIRCULAR_NUMBER_LINE
A new approach to ordering complex numbers - Dharmendra Kumar Yadav
https://www.researchgate.net/publication/267465398_A_new_approach_to_ordering_complex_numbers

4D Euclidean space - Eusebeia - <https://www.qfbox.info/> && <https://www.qfbox.info/4d/>

Fondamenti di geometria del compasso - F. Fabrizi and P. Pennestrì
https://pennestrì.me/media/uploads/2018/09/fondamenti_geometria_compasso.pdf
A new reading of Archytas' doubling of the cube and its implications - Ramon Masia - <https://www.jstor.org/stable/24913477>
A Possible Solution of Trisection Problem - Siavash H. Sohrab
<http://www.wseas.us/e-library/conferences/2012/CambridgeUSA/MATHCC/MATHCC-44.pdf>

3d Geometrie - Tadeusz E. Dorozinski - <http://www.3doro.de/>

oPhysics: Interactive Physics Simulations - <https://ophysics.com/> && Phet Interactive Physics Simulations - <https://phet.colorado.edu/en/>

Coordinate Proposal - Michi Ro - <https://archive.org/details/coordinateProposal>

2D Digital Geometry - Robin Strand - https://www.it.uu.se/edu/course/homepage/bild2/ht11/Lectures/bildan2_11_robin_F1.pdf
A Contribution to 3D Digital Lines - Oscar Figueiredo and Jean-Pierre Reveilles
https://www.researchgate.net/publication/37443248_A_Contribution_to_3D_Digital_Lines
Pixel connectivity - https://en.wikipedia.org/wiki/Pixel_connectivity
Pixi (language) - <https://warmplace.ru/soft/pixilang/>

Clifford parallel - https://en.wikipedia.org/wiki/Clifford_parallel

Tau manifesto - <https://tauday.com/tau-manifesto> && <https://hexnet.org/files/documents/tau-manifesto.pdf>

Triangular wheel - <https://www.popularmechanics.com/military/a21932118/darpa-wheels-become-tank-tracks/>
Shark Wheel - https://en.wikipedia.org/wiki/Shark_Wheel#Application
Fractal gear - https://ksr-ugc.imgix.net/assets/004/987/498/d1d3926f15a17d6194a07825630d3424_original.gif?ixlib=rb-2.1.0&w=680&fit=max&v=1448600022&auto=format&gif-q=50&q=92&s=9851a96b94a4aaab1fdf587ccd3e5647

Le pédalier Cerdan - <https://www.designboom.com/technology/cerdan-crankset-increases-pedaling-power-06-30-2021/>
Pédalier Cerdan (whitepaper) - https://lepedaliercerdan.com/wp-content/uploads/2021/03/DP_2021_CERDAN_LE-PEDALIER_VF.pdf

Steinhaus longimeter - https://en.wikipedia.org/wiki/Steinhaus_longimeter
Opisometer - <https://en.wikipedia.org/wiki/Opisometer>

Cycles in hypergraphs - <https://math.stackexchange.com/questions/512581/what-is-a-cycle-hypergraph>

Inertial frames - Julio di Egidio - <https://jp-diegidio.github.io/STUDY.Physics.SpecialRelativity/InertialFrames/App/index.html>

Whiskers and short fiber technology - John V. Milewski (whiskers, short fibers and cobwebs)
<https://www.sciencedirect.com/science/article/pii/B9780080347202501428> (doi:10.1002/pc.750130311)

The Crystal Sourcebook: From Science to Metaphysics - <https://www.amazon.com/Crystal-Sourcebook-Science-Metaphysics/dp/0961826797>
Growing Ormus Gold In The Microwave w/ Dr. John V. Milewski - <https://www.youtube.com/watch?v=NMnWnW0esLs>
Superlight, a Dynamic Aether, Explains Pushing Gravity and Inertia, and Says No Neutrinos, Gluons or Dark Matter - http://www.naturalphilosophy.org/pdf/abstracts/abstracts_5324.pdf
Magnetricity - <http://the-door.net/the-colorado-center/wp-content/uploads/2012/10/MAGNETRICITY.pdf>
Far-Infrared, SuperLight and Beyond - <https://vimeo.com/24959146>
<https://web.archive.org/web/20070228223826/http://www.luminet.net/~wenonah/new/milewski.htm>

Hilbert's arithmetic of ends - https://en.wikipedia.org/wiki/Hilbert%27s_arithmetic_of_ends

Clebsch Surface - <https://blogs.ams.org/visualinsight/2016/03/01/clebsch-surface/>
<https://blogs.ams.org/visualinsight/2016/02/15/27-lines-on-a-cubic-surface/>

Layers of the internet - <https://medium.com/nerd-for-tech/mysterious-side-of-the-internet-5d2a02e103b7>
Characterizing Activity on the Deep and Dark Web - Nazgol Tavabi, Nathan Bartley, Andrés Abeliuk, Sandeep Soni, Emilio Ferrara and Kristina Lerman - <https://arxiv.org/pdf/1903.00156.pdf>

Blau space - https://en.wikipedia.org/wiki/Blau_space

Quadrants in descriptive geometry https://en.wikipedia.org/wiki/Multiview_orthographic_projection#Quadrants_in_descriptive_geometry
Pohlke's theorem - https://en.wikipedia.org/wiki/Pohlke's_theorem
Pohlke's Theorem in Four Dimensions - C. H. Sisam - <https://www.jstor.org/stable/2300693>

Double Fourier sphere method - https://en.wikipedia.org/wiki/Double_Fourier_sphere_method

On Metageometry and the Sense of Direction - H. S. Shelton - <https://philpapers.org/rec/SHEOMA>

Encyclopédie des formes mathématiques remarquables - <https://mathcurve.com/>

Over-unity Forums - <https://overunity.com/community/> && <https://www.overunityresearch.com/>

Fernando Sixto Ramos (mechanical system) - <https://www.youtube.com/watch?v=lbUIy11ufIQ>
L'Ingegno di Umberto Baudo, Free-Energy dallo Spazio (mechanical mechanism from crop circles)
https://www.youtube.com/watch?v=fvLFycr_wOQ

Seashell surface - https://en.wikipedia.org/wiki/Seashell_surface
Foundations of theoretical conchology - C. R. Illert and R. M. Santilli - <http://www.santilli-foundation.org/docs/Santilli-109.pdf>

Pentcho Valev (confronting relativity and thermodynamics) - https://twitter.com/pentcho_valev

James McGinn - Solving Tornadoes - <https://anchor.fm/james-mcginn/>
Hydrogen Bonding As The Mechanism That Neutralizes H2O Polarity - <https://zenodo.org/record/37224>
Hydrogen Bonds Neutralize H2O Polarity - <https://www.thunderbolts.info/forum/phpBB3/viewtopic.php?t=16798%EF%BB%BF>

Join Geometries A Theory of Convex Sets and Linear Geometry - Walter Prenowitz and James Jantosciak
<https://www.amazon.com/Join-Geometries-Geometry-Undergraduate-Mathematics/dp/1461394406>

Cave survey - https://en.wikipedia.org/wiki/Cave_survey
Most cave survey programs do least squares wrong - <https://www.fountainware.com/compass/Documents/compart2.htm>

Polyspherical Coordinates (N. Ja. Vilenkin) - https://www2.chem.ucl.ac.uk/worthgrp/quantics/doc/vcham/polyspherical_docu.html
<https://web.archive.org/web/20110202060209/http://bandtechnology.com/>

Dr. Arturo Solis Herrera on Melanin, Water and the Origins of Life - <https://www.youtube.com/watch?v=to4V7WoV6Qg>

Flowform Water Research - <http://www.foundationforwater.org/wp-content/uploads/2013/07/FWR-Research-on-Flowform-Effects-03.pdf>

Como acercar la geometria 4d al publico general - L. Te - <https://vixra.org/pdf/2010.0248v1.pdf>

Older and contemporary attempts for inertial propulsion - Christopher Provatidis
https://www.researchgate.net/publication/260318778_Older_and_contemporary_attempts_for_inertial_propulsion
The Repulsin - Viktor Schaubergers - <http://www.vortex-world.org/repulsin.htm>
Avro Canada VZ-9 Avrocar - https://en.wikipedia.org/wiki/Avro_Canada_VZ-9_Avrocar
Flying Saucer - Jacque Fresco - https://commons.wikimedia.org/wiki/File:Jacque_Fresco_-_Flying_Saucer.jpg
Bob Lazar - <https://boblazar.com/> && Robert Krangle - <https://vimeo.com/132187335>

Sorpresas matemáticas en 3d - <http://claudialsina.com/sorpresas-matematicas-en-3d>

Design with Constructal Theory - Adrian Bejan - <https://www.amazon.com/Design-Constructal-Theory-Adrian-Bejan/dp/0471998168>

Polyhedra with Equilateral Heptagons - Marcel Tunnissen - <https://archive.bridgesmathart.org/2008/bridges2008-433.pdf>
<http://tunnissen.eu/polyh/heptagons/index.html>

Spiric of Perseus - https://en.wikipedia.org/wiki/Spiric_section && <https://mathworld.wolfram.com/SpiricSection.html>

Circles in torus–torus intersections - Ku-Jin Kim - <https://core.ac.uk/download/pdf/81114353.pdf>

A Tentative Magnecular Model of Liquid Water with an Explicit Attractive Force Between Water Molecules - R. Santilli - <http://www.santilli-foundation.org/docs/santilli-liquid-water.pdf>

Wolfgang W. Daeumler - <https://www.youtube.com/channel/UCCTJqv7734pD5FLFbt-5DLw/videos>

Horn Torus - <https://www.horntorus.com/text/>

Revolution and rotation - https://www.horntorus.com/illustration/standard_horntorus_turns_00.html

Dynamically uncoiling horn torus coordinate - <https://www.horntorus.com/illustration/URLdetail.html>

Unit particle - https://www.horntorus.com/illustration/Lissajous_1to1.html

Sphere to horn torus - <https://www.horntorus.com/2nd-method.html#push>

Däumler's conformal mapping - <https://www.horntorus.com/manifolds/conformal.html>

Polytope compound - https://polytope.miraheze.org/wiki/Polytope_compound

Vectors, Cyclic Submodules and Projective Spaces Linked with Ternions - Hans Havlicek and Metod Saniga

https://www.researchgate.net/publication/1737480_Vectors_Cyclic_Submodules_and_Projective_Spaces_Linked_with_Ternions

Incidence structures - https://en.wikipedia.org/wiki/Incidence_structure#Examples

A Topological Picturebook - George K. Francis - <https://www.amazon.com/Topological-Picturebook-George-K-Francis/dp/0387345426>

Parameterizing the Trifocal Tensor - Silver (Joni) De Guzman and Anthony Thomas

https://cseweb.ucsd.edu/classes/sp17/cse252C-a/CSE252C_20170510.pdf

The Great Pi Conspiracy - Mark and Scott Wollum - <https://omnithought.org/great-pi-conspiracy/2584>

Quasic blog - L. Edgar Otto - <https://pesla.blogspot.com/>

Spiritual Mathematics: Introduction to the Circular Number System – John Dunne-Brady

https://books.google.cl/books?id=dDPgAgAAQBAJ&printsec=frontcover&source=gbs_ge_summary_r&cad=0#v=onepage&q&f=false

Nova processes - Ted Gress - <https://www.twilightraven.net/> && <http://vixra.org/pdf/1804.0337v1.pdf>

Tetryonics – <https://tetryonics.com/>

(13) LISTS OF OPEN PROBLEMS

Darpa 23 Maths Problems - <https://compmath.wordpress.com/about/10-the-big-picture-darpas-23-challenge-questions/>

Problems of the Wolfram Project - <https://www.wolframscience.com/openproblems/NKSOpenProblems.pdf>

<http://mathworld.wolfram.com/UnsolvedProblems.html>

Open problems in Mathematics - John Forbes Nash Jr and Michael Rassias

<http://www.mthrassias.com/data/uploads/bfm3a978-3-319-32162-22f1.pdf>

Worlds to Die Harder For Open Oracle Questions for the 21st Century - Lance Fortnow

<https://lance.fortnow.com/papers/files/open-oracle-survey.pdf>

Erdős' Problems on Graphs - students of Fan Chung - <https://mathweb.ucsd.edu/~erdosproblems/>

Open problems in tetration - <https://math.eretrandre.org/tetrationforum/showthread.php?tid=162>

Open problems of The geometry junkyard - <https://www.ics.uci.edu/~eppstein/junkyard/open.html>

A quest for Exactness : machines, algebra and geometry for tractional constructions of differential equations - Pietro Milici

<https://tel.archives-ouvertes.fr/tel-01889365/document> (See section "7.3 Open problems and perspectives")

