

Fig.1 a)

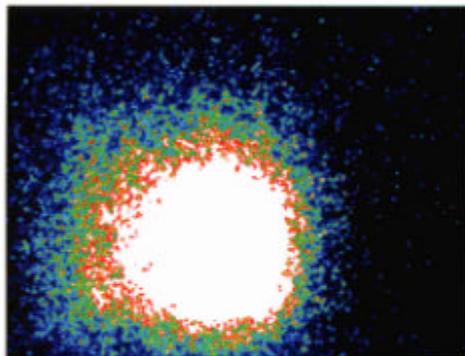


Fig. 2 a)

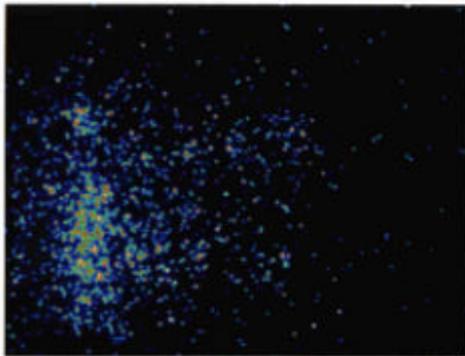


Fig. 3 a)

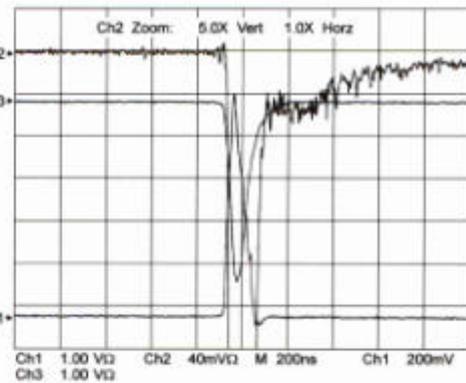


Fig.1 b)

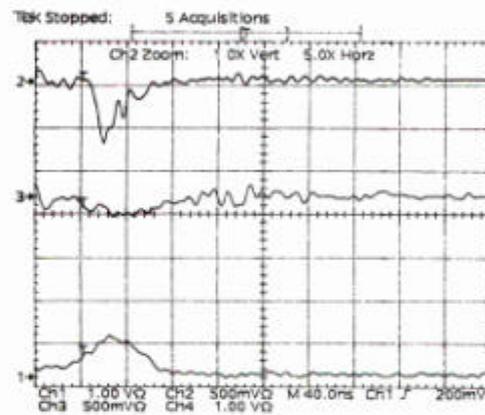


Fig.2 b)

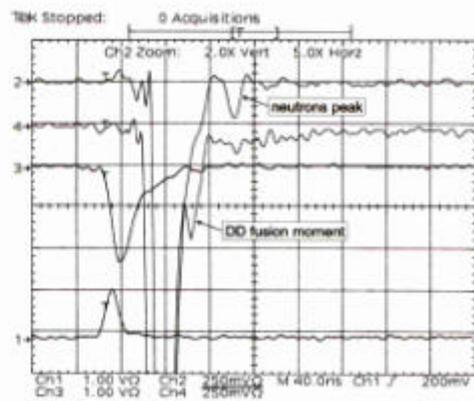


Fig.3 b)

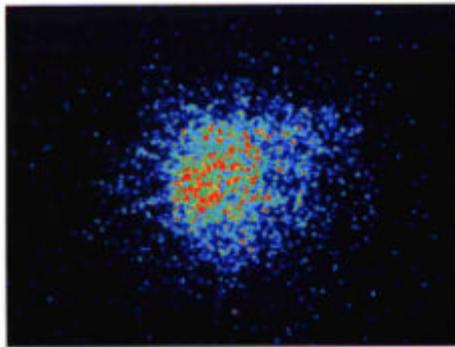


Fig.1. Typical non-saturated hard x-ray view (x-ray "ball") of the ensemble of cold grain - hot microplasmas (high power density matter - HPDM) originated from "dusty" target in vacuum discharge with hollow cathode.

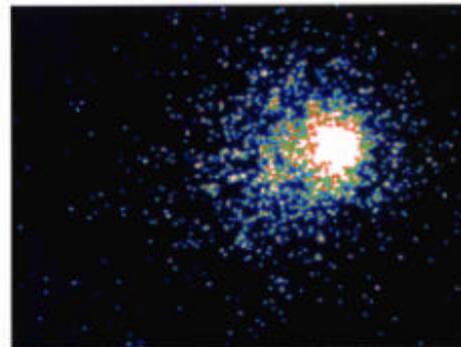


Fig.2. Partially trapped hard x-ray inside the "ball" interior (modeling of energy transport in clusters of stars and x-ray bursts under cluster "explosion", fig.6).

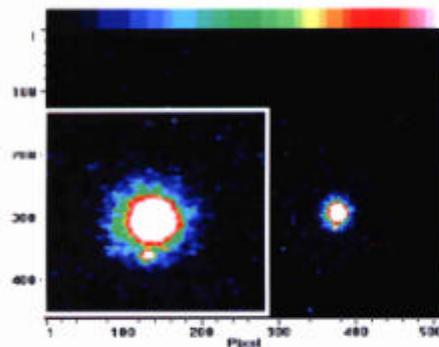


Fig.3. Suprathermal hard x-ray in all directions from uniform plasmas lasant medium (limiting case of x-ray dots collecting like on fig.2); increased view of the uniform x-ray "ball" is presented at the icon.

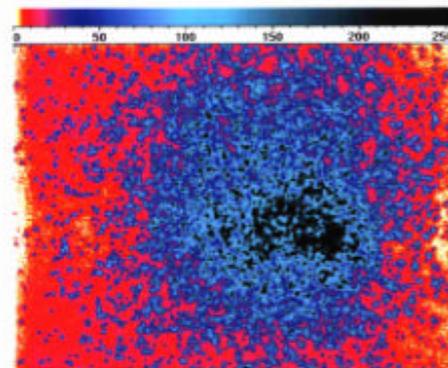


Fig.4. Plasmas x-ray "dust" produced single pass ASE regime of lasing into particular direction (which is opposite to camera view).

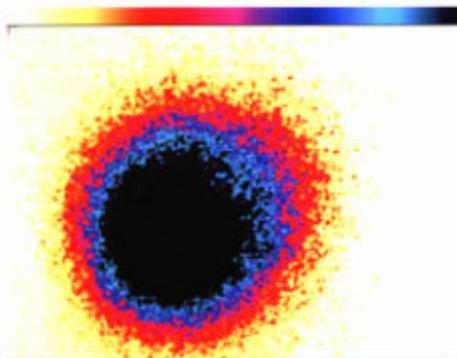


Fig.5. Hard x-ray and HPDM guiding in hollow macro cathode interior under partial inhomogenities in gain profile or varying conditions over the length, end-on view

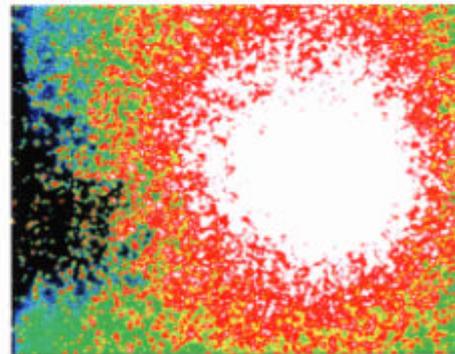
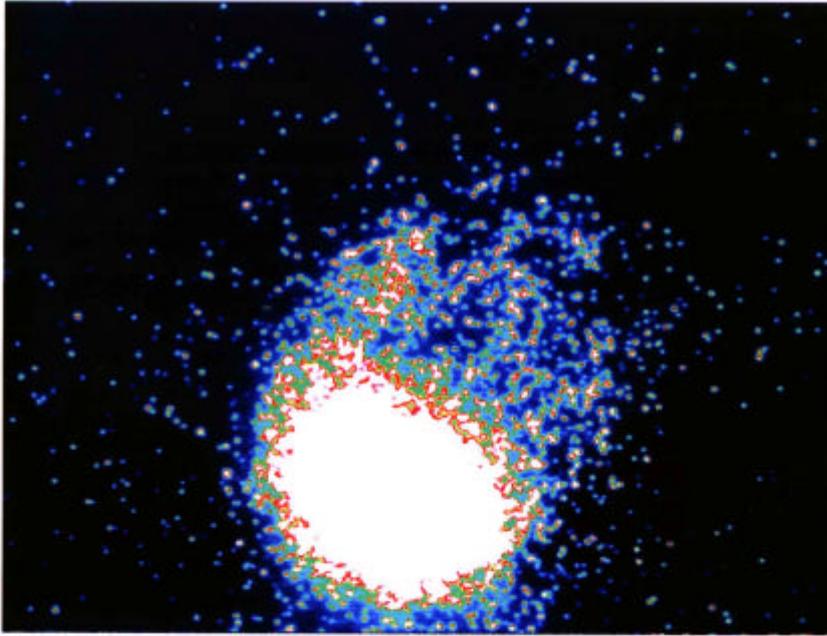
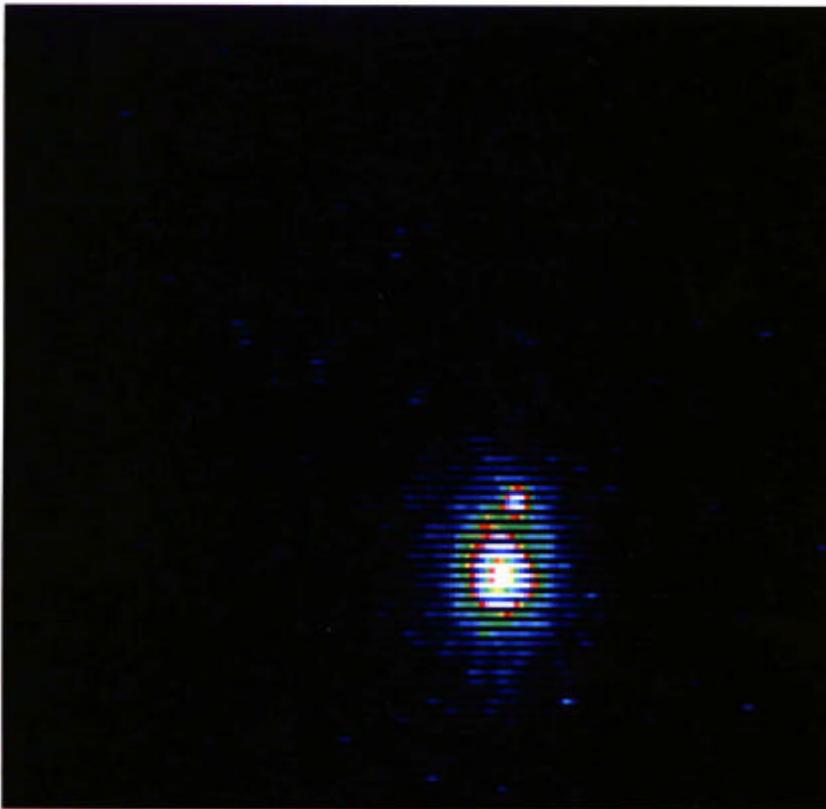


Fig.6. Hard x-ray "random" laser: burst in a mixture of scattering and amplifying media (cold grains and hot micro-plasmas, correspondingly). "Ball" interior may contain both partially trapped x-ray and energetic ions.



Burst- Random laser in dust- Diameter  $\sim 10\text{mm}$



Cluster of ectons diameter  $\sim 1\text{mm}$