

## TROIS CAS NON PONCTUEL

$$Charge := 750 \text{ N}$$

$$Laimant := 32 \text{ mm}$$

$$Wcharge := \frac{Charge}{Laimant} \quad Wcharge = 23.438 \frac{\text{N}}{\text{mm}}$$

$$Long := 108 \text{ mm}$$

$$Daxe := 10 \text{ mm}$$

$$Eacier := 210 \text{ GPa}$$

$$Jaxe := \frac{\pi \cdot Daxe^4}{64} \quad Jaxe = 490.874 \text{ mm}^4$$

$$Cte := \left( \frac{Wcharge}{24 \cdot Eacier \cdot Jaxe \cdot Long} \right)$$

### CAS 1

#### UNITE MICROMETRE

$$a1 := 73 \text{ mm} \quad b1 := 89 \text{ mm} \quad c1 := 26 \text{ mm} \quad xx1 := c1$$

$$Flèche1 := Cte \cdot \left( (4 \cdot c1 \cdot (b1 - a1)) \cdot (Long^2 - xx1^2) \cdot xx1 + Long \cdot (xx1 - a1)^4 - Long \cdot (xx1 - b1)^4 - (Long - a1)^4 \cdot xx1 + (Long - b1)^4 \cdot xx1 \right)$$

$$Flèche1 = -64.434 \text{ } \mu\text{m}$$

### CAS 2

$$a2 := 53 \text{ mm} \quad b2 := 69 \text{ mm} \quad c2 := 46 \text{ mm} \quad xx2 := c2$$

$$Flèche2 := Cte \cdot \left( (4 \cdot c2 \cdot (b2 - a2)) \cdot (Long^2 - xx2^2) \cdot xx2 + Long \cdot (xx2 - a2)^4 - Long \cdot (xx2 - b2)^4 - (Long - a2)^4 \cdot xx2 + (Long - b2)^4 \cdot xx2 \right)$$

$$Flèche2 = 83.205 \text{ } \mu\text{m}$$

### CAS 3

$$a3 := 33 \text{ mm} \quad b3 := 49 \text{ mm} \quad c3 := 66 \text{ mm} \quad xx3 := c3$$

$$Flèche3 := Cte \cdot \left( (4 \cdot c3 \cdot (b3 - a3)) \cdot (Long^2 - xx3^2) \cdot xx3 + Long \cdot (xx3 - a3)^4 - Long \cdot (xx3 - b3)^4 - (Long - a3)^4 \cdot xx3 + (Long - b3)^4 \cdot xx3 \right)$$

$$Flèche3 = 76.128 \text{ } \mu\text{m}$$

### Evolution de la flèche le long de l'axe en fonction de la position de l'aimant

$$x := 0 \text{ mm}, 1 \text{ mm} \dots 110 \text{ mm}$$

$$f1(x) := Cte \cdot \left( (4 \cdot c1 \cdot (b1 - a1)) \cdot (Long^2 - x^2) \cdot x + Long \cdot (x - a1)^4 - Long \cdot (x - b1)^4 - (Long - a1)^4 \cdot x + (Long - b1)^4 \cdot x \right)$$

$$f2(x) := Cte \cdot \left( (4 \cdot c2 \cdot (b2 - a2)) \cdot (Long^2 - x^2) \cdot x + Long \cdot (x - a2)^4 - Long \cdot (x - b2)^4 - (Long - a2)^4 \cdot x + (Long - b2)^4 \cdot x \right)$$

$$f3(x) := Cte \cdot \left( (4 \cdot c3 \cdot (b3 - a3)) \cdot (Long^2 - x^2) \cdot x + Long \cdot (x - a3)^4 - Long \cdot (x - b3)^4 - (Long - a3)^4 \cdot x + (Long - b3)^4 \cdot x \right)$$

