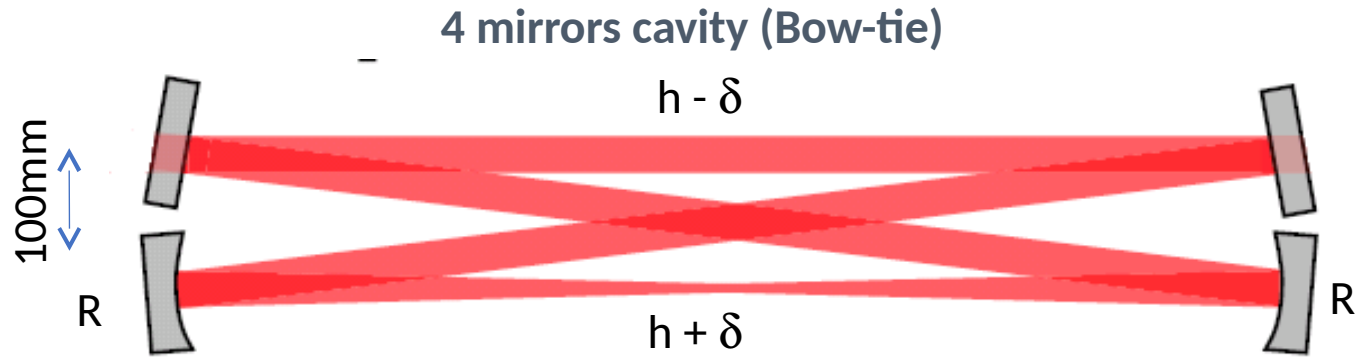
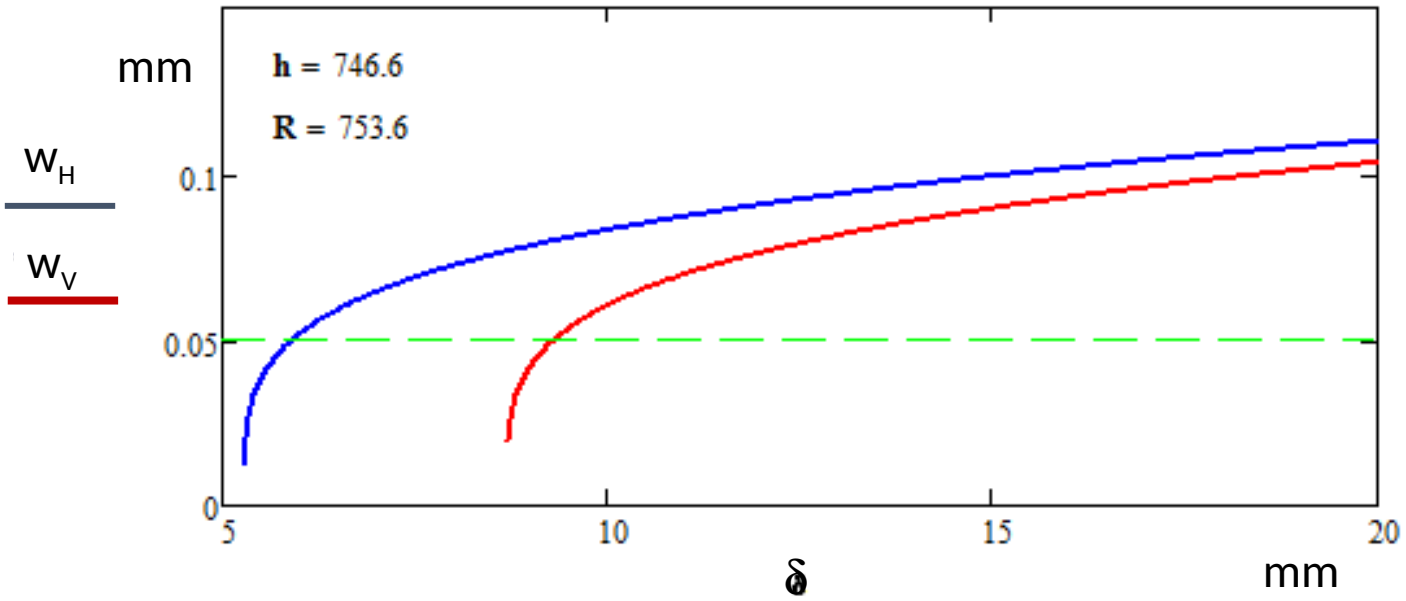
Elliptical asimmetry



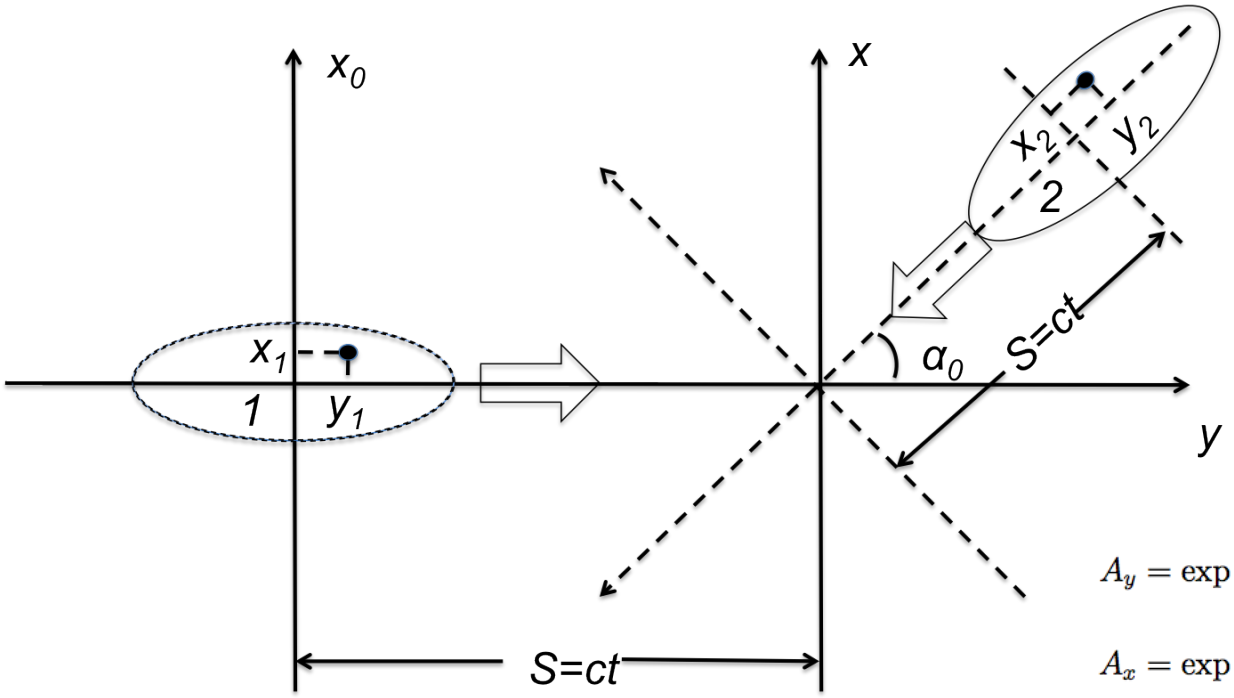
L_{tot}=3000mm, θ = 8°

$$I(x) = I_0 e^{-\frac{2x^2}{w^2}}$$



Acknowledgments to S. Cialdi

Elliptical asimmetry

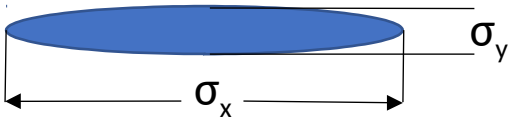


$$A_y = \exp\left(-\frac{\Delta y^2 \tan^2(\alpha_0)}{2(\sigma_{x1}^2 + \sigma_{x2}^2 + (\sigma_{z1}^2 + \sigma_{z2}^2)\tan(\frac{\alpha_0}{2}))}\right)$$

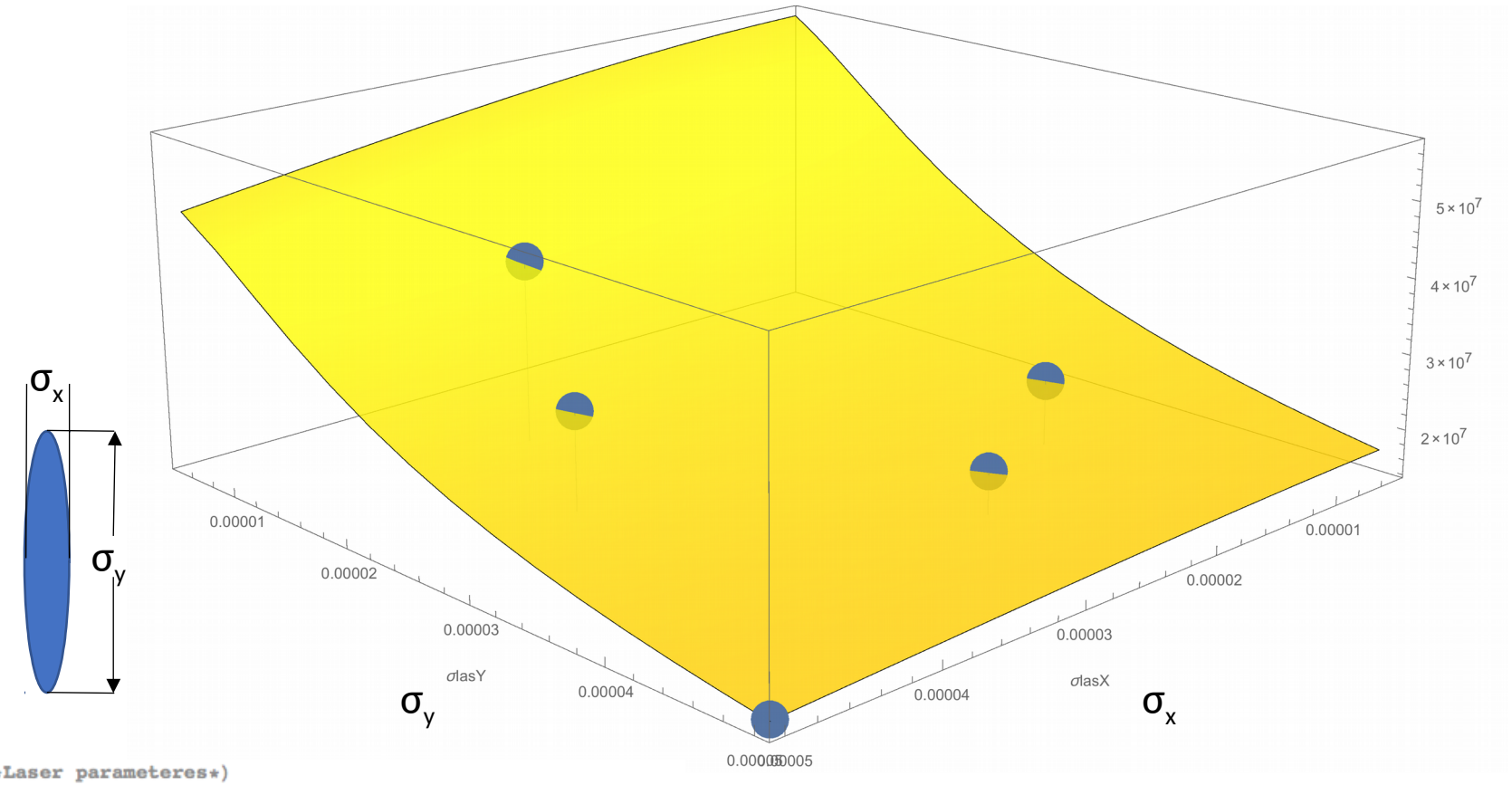
$$A_x = \exp\left(-\frac{\Delta x^2}{2(\sigma_{x1}^2 + \sigma_{x2}^2 + (\sigma_{z1}^2 + \sigma_{z2}^2)\tan(\frac{\alpha_0}{2}))}\right)$$

$$A_z = \exp\left(-\frac{\Delta z^2}{2(\sigma_{y1}^2 + \sigma_{y2}^2)}\right)$$

$$N = \frac{A_y A_x A_z}{\sqrt{2}\pi\sqrt{\sigma_{y1}^2 + \sigma_{y2}^2}} \frac{\sigma N_1 N_2 f}{\sqrt{\sigma_{x01}^2 + \sigma_{x2}^2 + (\sigma_{z1}^2 + \sigma_{z2}^2)\tan(\frac{\alpha_0}{2})}}$$

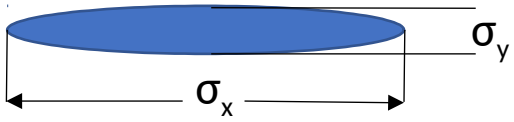


Elliptical asimmetry

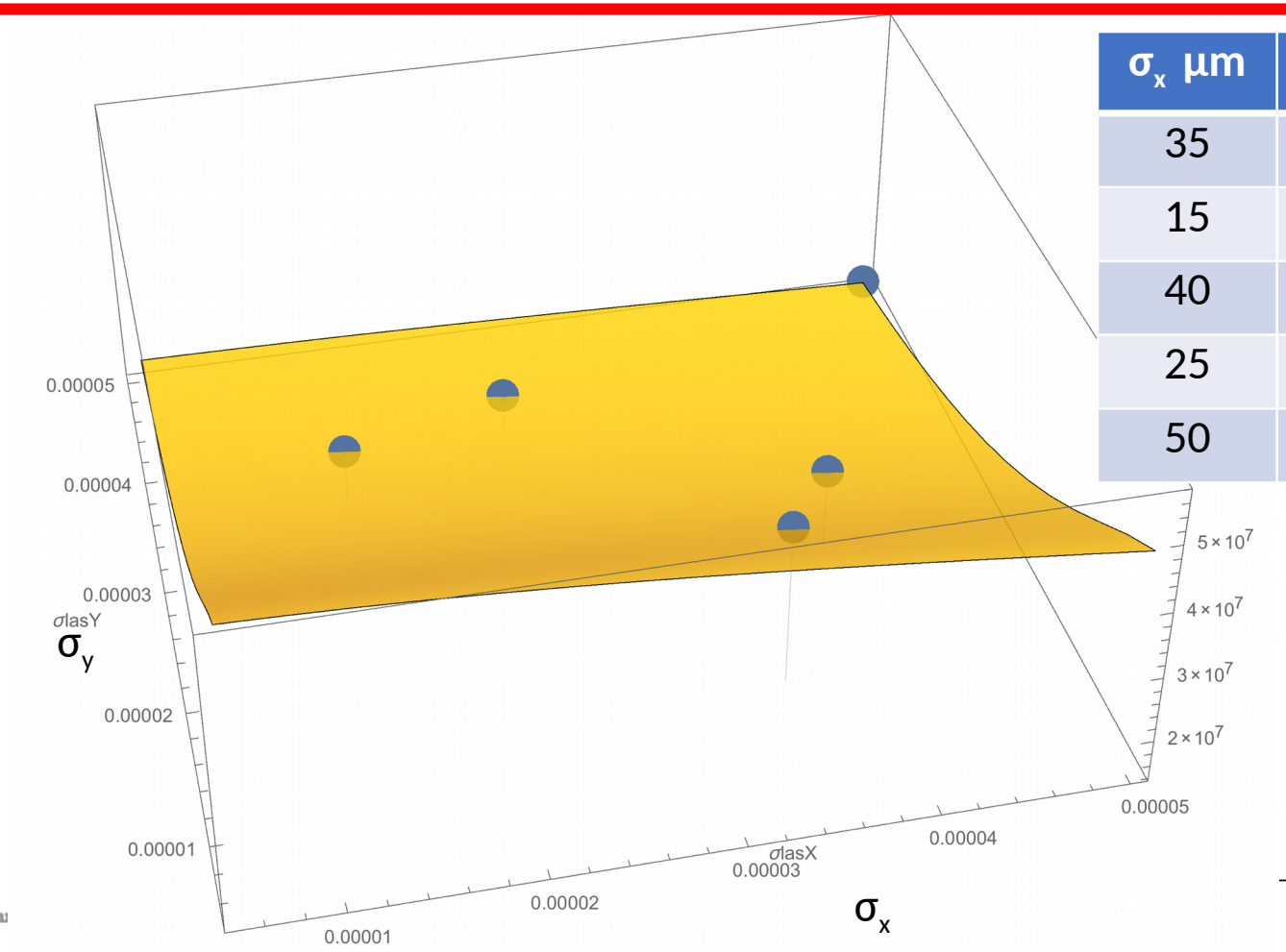



```
(*Laser parameteres*)
α = 10;
σt = 2 × 10^-12 c;
lambdal = 1030 × 10^-9; (*[m] laser wave length*)
pulseE = 1; (*[J]*)

(*electron bunch parameters*)
chargebunch = 200 × 10^-12; (*Charge per electrons bunch[c]*)
σx = 15 × 10^-6; (* IP vertical electron beam size[m];*)
σy = 15 × 10^-6; (*IP horizontal electron beam size[m]*)
σz = 2 × 10^-12 * c; (* intial bunch length[s]*)
```



Elliptical asimmetry



σ_x µm	σ_y µm	Flux
35	15	3.9
15	35	2.34
40	25	2.77
25	40	2.03
50	50	1.47

```
(*Laser para
α = 10;
σt = 2 × 10^-12 c;
lambdal = 1030 × 10^-9; (*[m] laser wave length*)
pulseE = 1; (*[J]*)

(*electron bunch parameters*)
chargebunch = 200 × 10^-12; (*Charge per electrons bunch[c]*)
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σz = 2 × 10^-12 * c; (* intial bunch length[s]*)
```
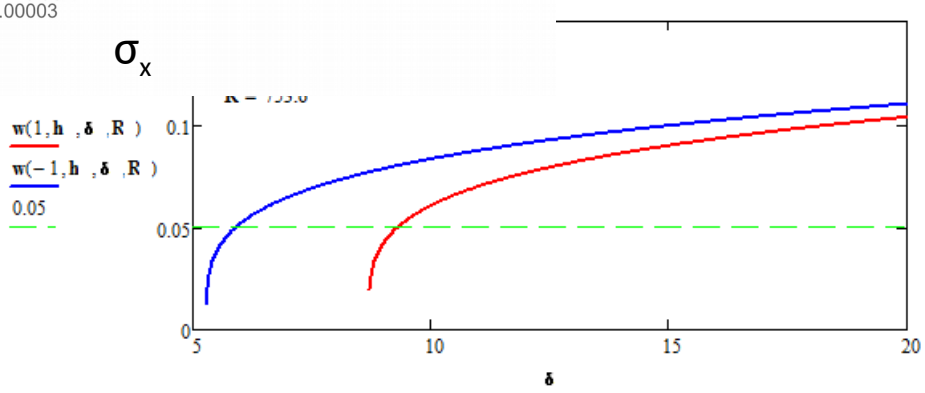
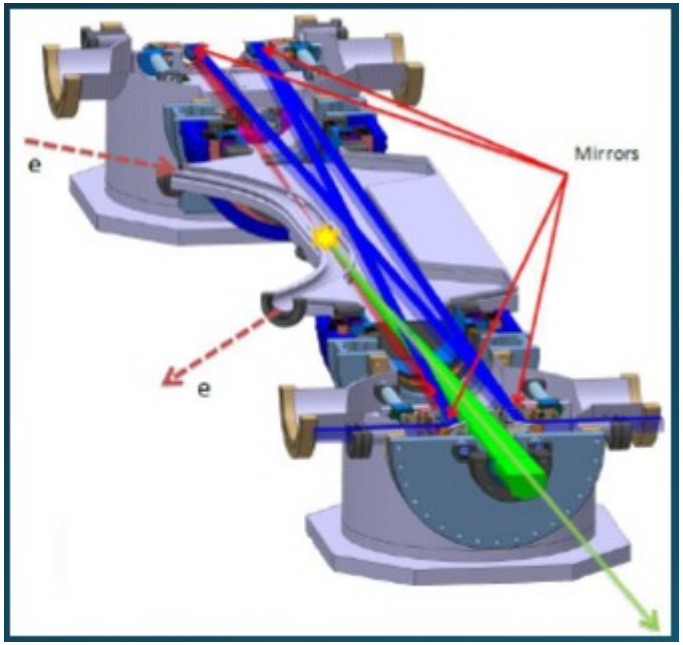
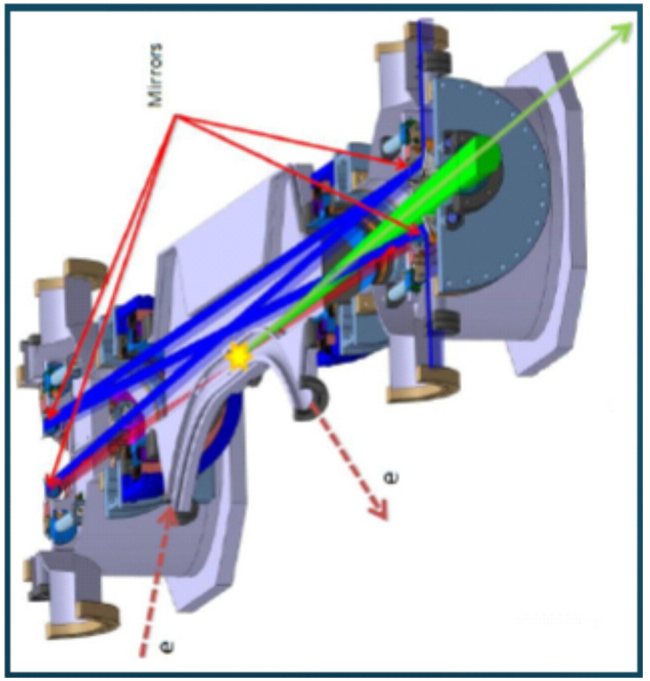



Elliptical asimmetry

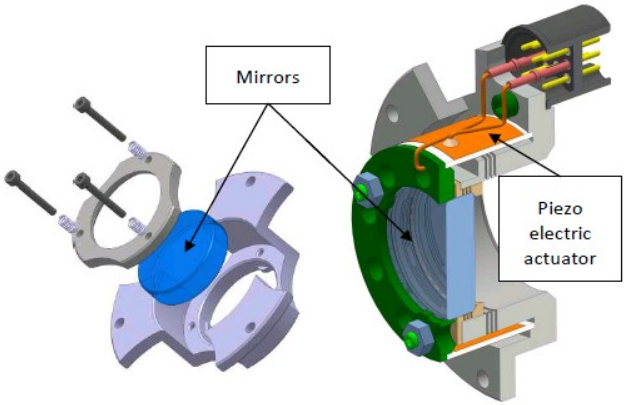




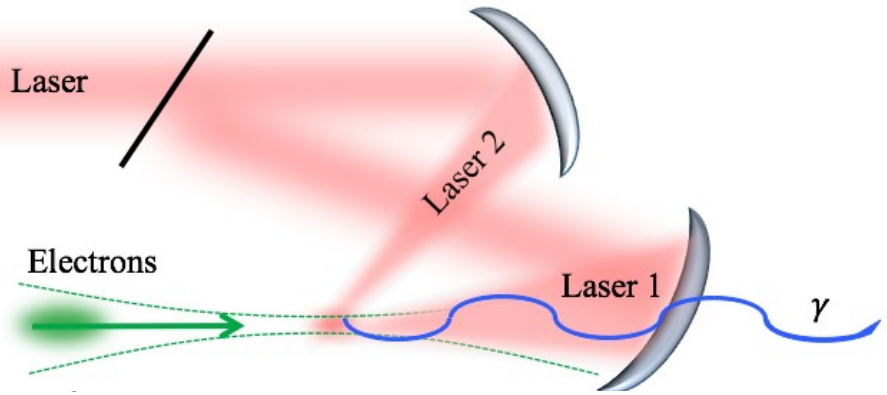
ThomX TDR

The vacuum equipment needed for the optical cavity is as follows:

- 2 ion pumps 150 l s^{-1} with their baking equipment and their power supplies,
- 2 ion pumps 500 l s^{-1} with their baking equipment and their power supplies,
- 2 gate valves manually actuated (pipe diameter DN100) and their baking equipment,
- 4 Pirani gauges,
- 4 cold cathode gauges,
- 2 power supplies for the gauges,
- 4 residual gas analyzers (RGA),
- 1 baking equipment for the vacuum chamber,
- 4 angle valves manually actuated for pre-pumping (pipe diameter DN63).



Two colour X-ray source



$$\varepsilon_{\gamma m} = \frac{4\gamma^2 \varepsilon_L \cos^2 \frac{\alpha_0}{2}}{4\gamma \frac{\varepsilon_L}{mc^2} \cos^2 \frac{\alpha_0}{2} + 1} \approx 4\gamma^2 \varepsilon_L cos^2 \frac{\alpha_0}{2}$$