

## Basic optical components of SMAUG beamline:

1. VCM: vertically collimating mirror - toroidal mirror at **10.5 m** (adjustable angle of incidence and optionally manually bendable).

$$R = 4.2 \text{ km}, \rho = 8.05 \text{ cm}$$

2. DCM/DMM: double crystal/multilayer monochromator at **12.5 m**

3. VFM: vertically focusing mirror - cylindrical mirror at **15 m** (adjustable angle of incidence and bendable, antiparallel to the first mirror)

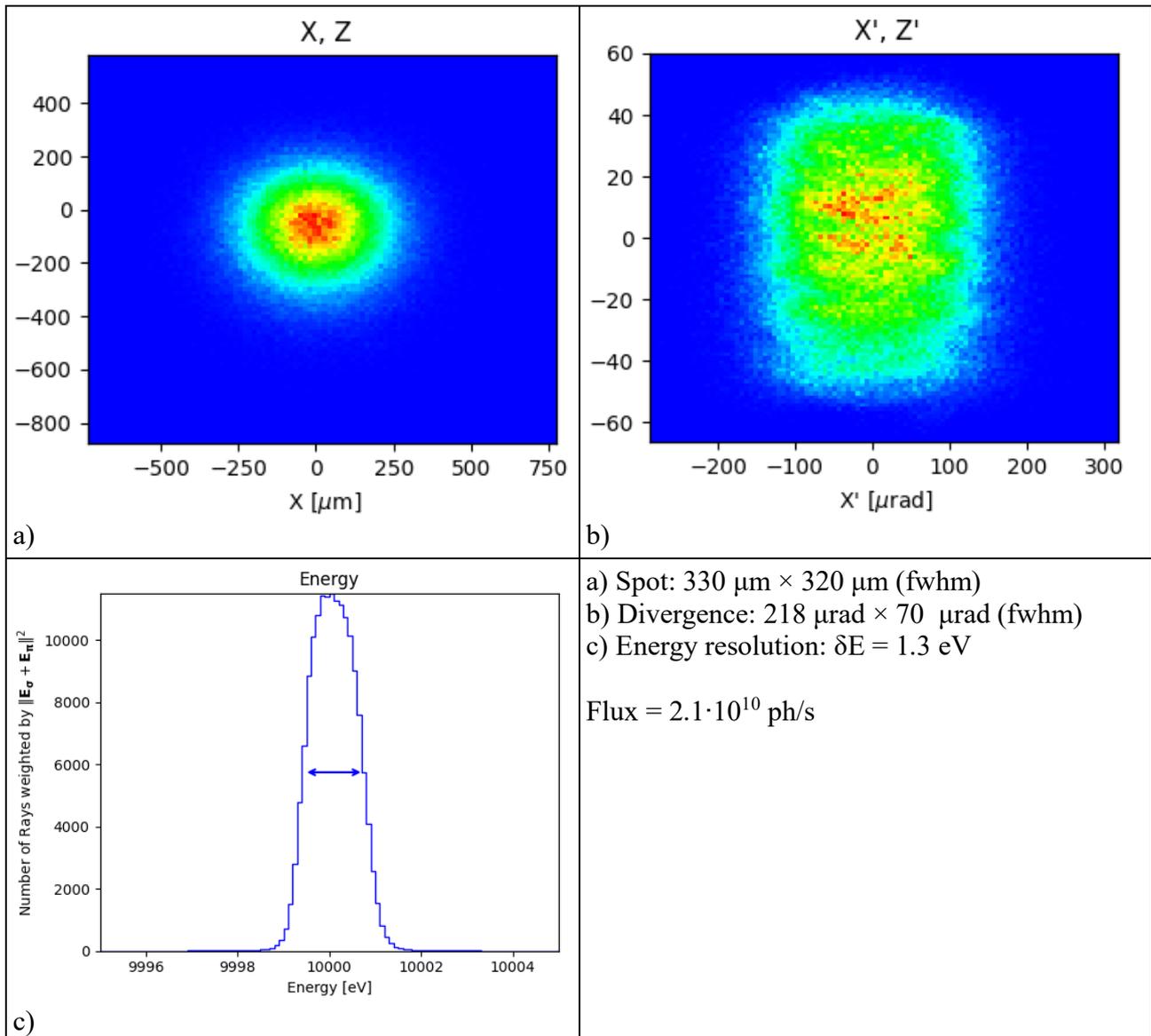
Middle of SAXS tube at **45 m** (nominal focal point)

## Ray tracing calculations for 10 keV:

### A) Middle of the SAXS tube in XEUSS 3.0 UHR (45 m)

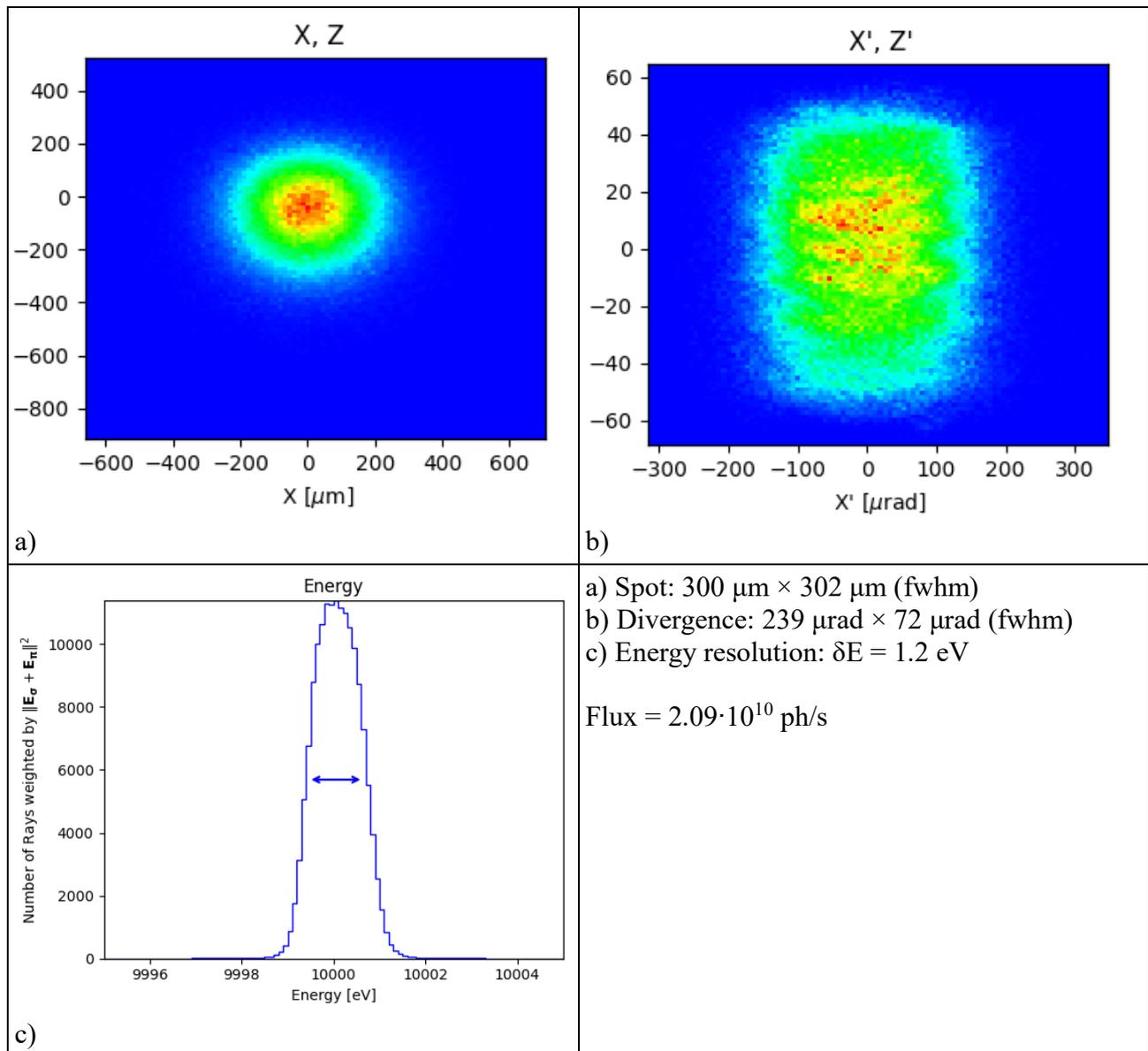
Grazing angle of both mirrors  $\theta = 5 \text{ mrad}$  (nominal)

VFM  $R \approx 12 \text{ km}$



## B) Sample position in XEUSS 3.0 UHR (42 m)

Grazing angle of both mirrors  $\theta = 5.11$  mrad  
VFM R  $\approx 10.56$  km



### C) End of the SAXS tube in XEUSS 3.0 UHR (48 m)

Grazing angle of both mirrors  $\theta = 4.907$  mrad  
VFM R  $\approx 13.45$  km

