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# elliptic beam guide



# concept and first tests

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ILL, Grenoble

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neutron optics group PSI:

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cooperation partners:

NMI3–JRA3–NO

HMI, TUM, etc.

funding:

NMI3                      HMI3-CT-2003-505925

MaNEP                    project 6, Mesot

SNF                        200021-101567

## elliptic beam guide

idea:

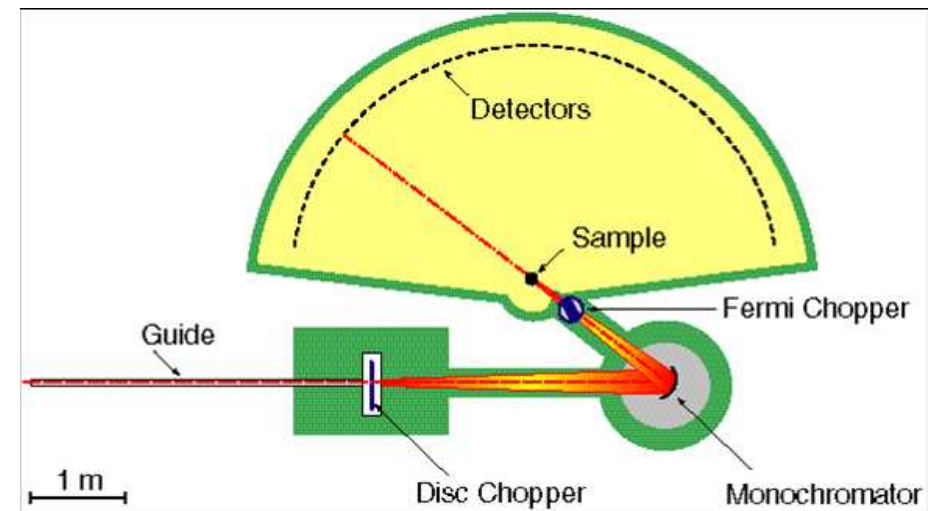
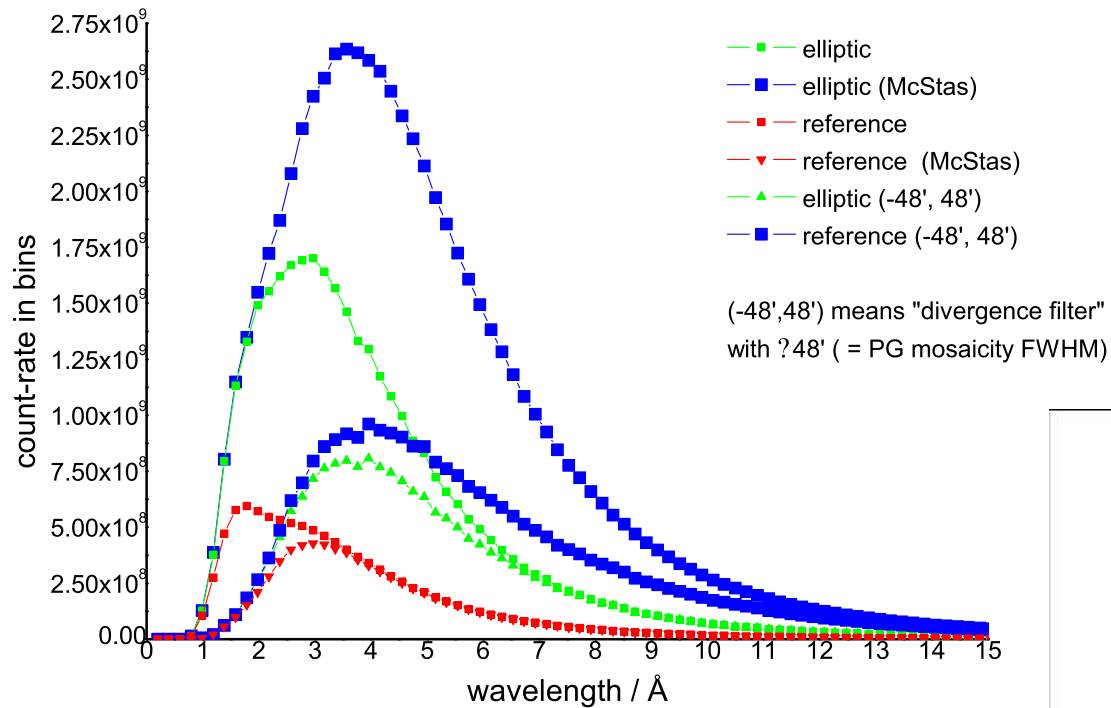
- guide walls are elliptically bent  
source and sample in the focal points
  - a point source would lead to at most 1 reflection horizontally and vertically.  
  
⇒ low losses due to limited reflectivity
  - high  $m$  needed only at guide entrance/exit
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# elliptic beam guide

## simulations for FOCUS@SINQ



FOCUS: Integrated wavelength distribution at the PG monochromator  
VITESS



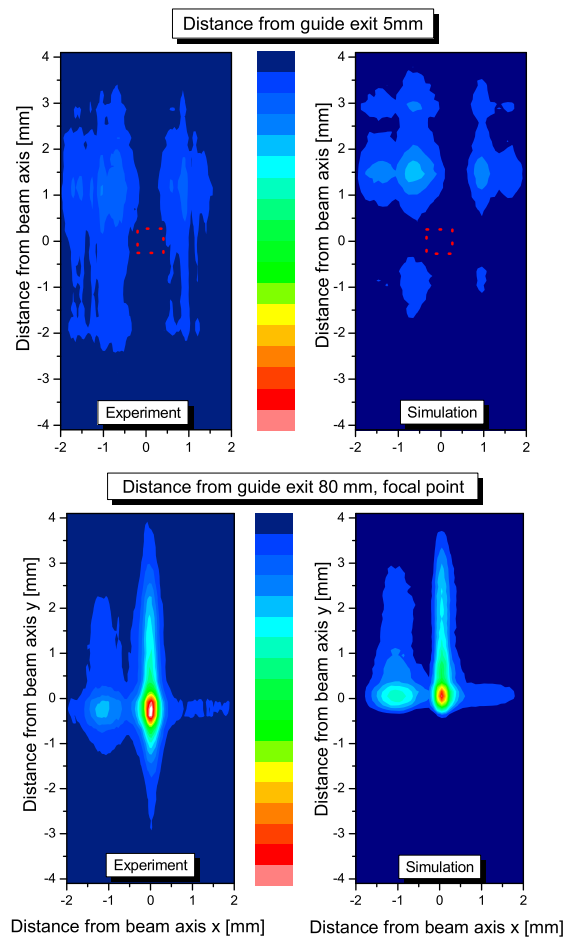
# elliptic beam guide

bi-elliptic neutron guide

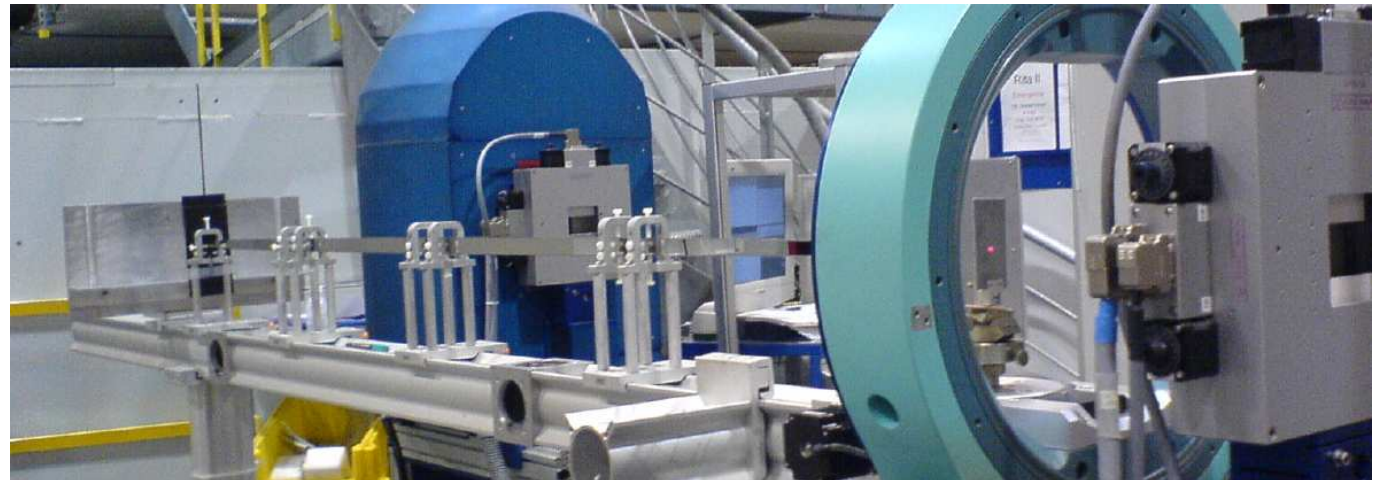
together with TUM

built by SwissNeutronics

# model



1:10 model of a neutron guide.  
ideally only 2 reflections from source to image  
openings:  $4 \times 8 \text{ mm}^2$ , length: 2 m



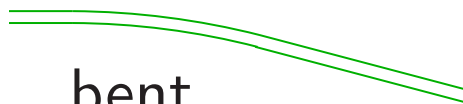
## elliptic beam guide

simulations: U. Filges

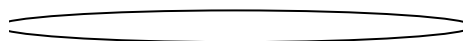
guide: 40 m, source/guide and guide sample: 1.8 m



straight guide



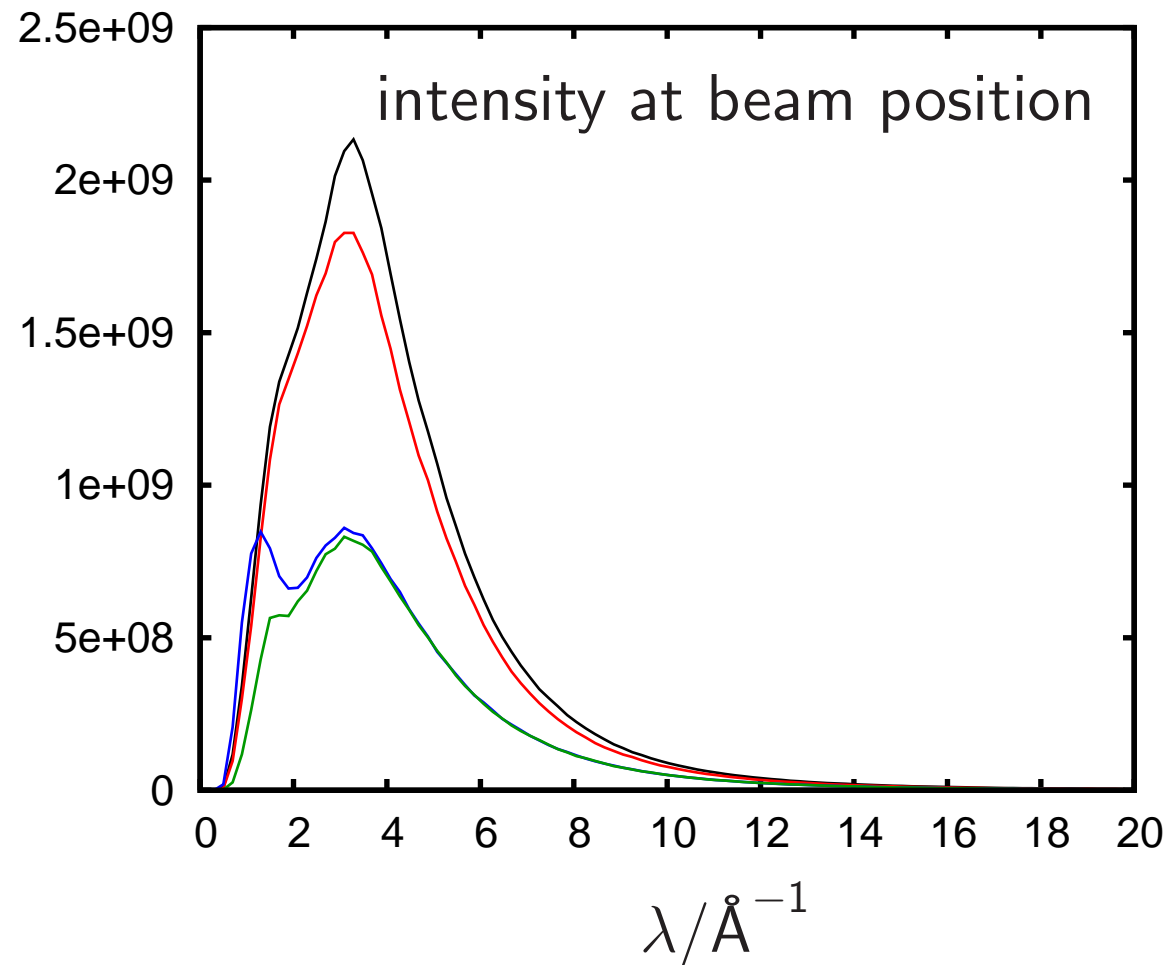
bent  
straight guide



elliptic guide



elliptic guide  
with absorber



# elliptic beam guide

