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elliptic beam guide



concept and first tests

ILL, Grenoble

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neutron optics group PSI:

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Jay Padiyath

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cooperation partners:

NMI3–JRA3–NO

HMI, TUM, etc.

funding:

NMI3 HII3-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.

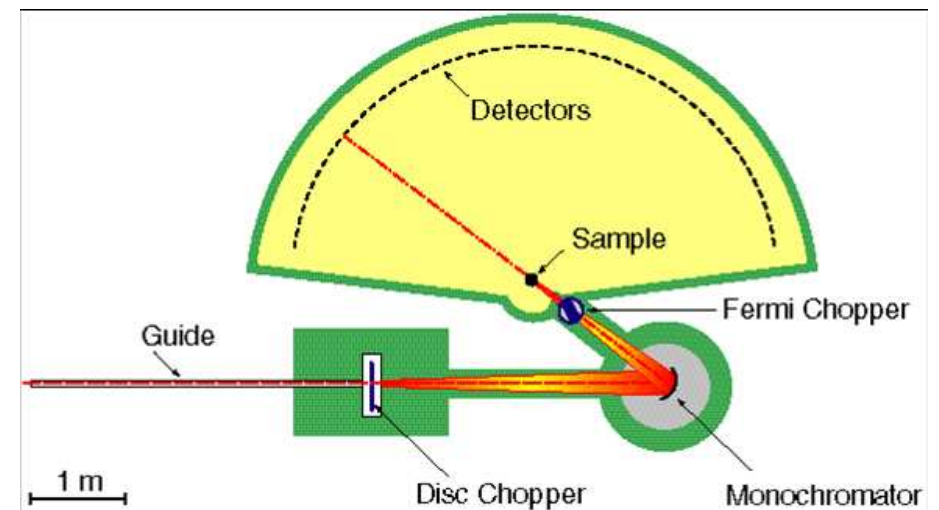
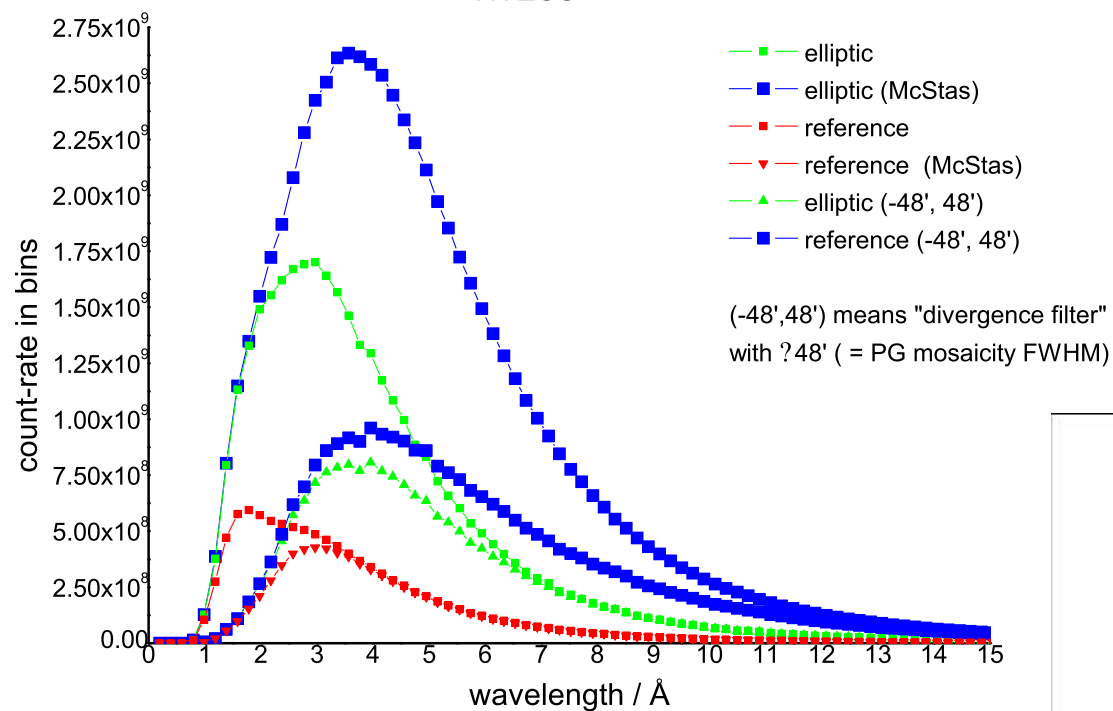
⇒ low losses due to limited reflectivity
 - high m needed only at guide entrance/exit
-

elliptic beam guide

simulations for FOCUS@SINQ



FOCUS: Integrated wavelength distribution at the PG monochromator
VITESS



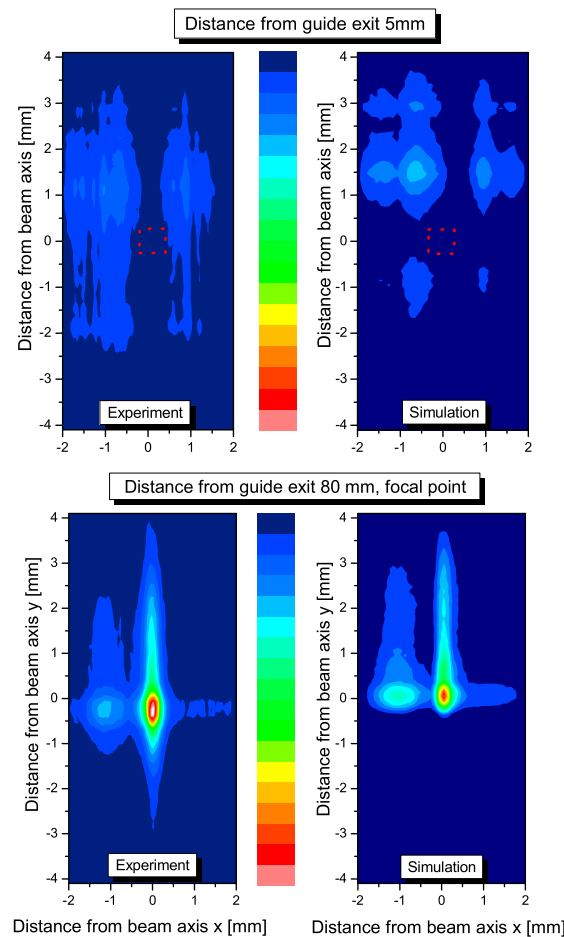
elliptic beam guide

bi-elliptic neutron guide

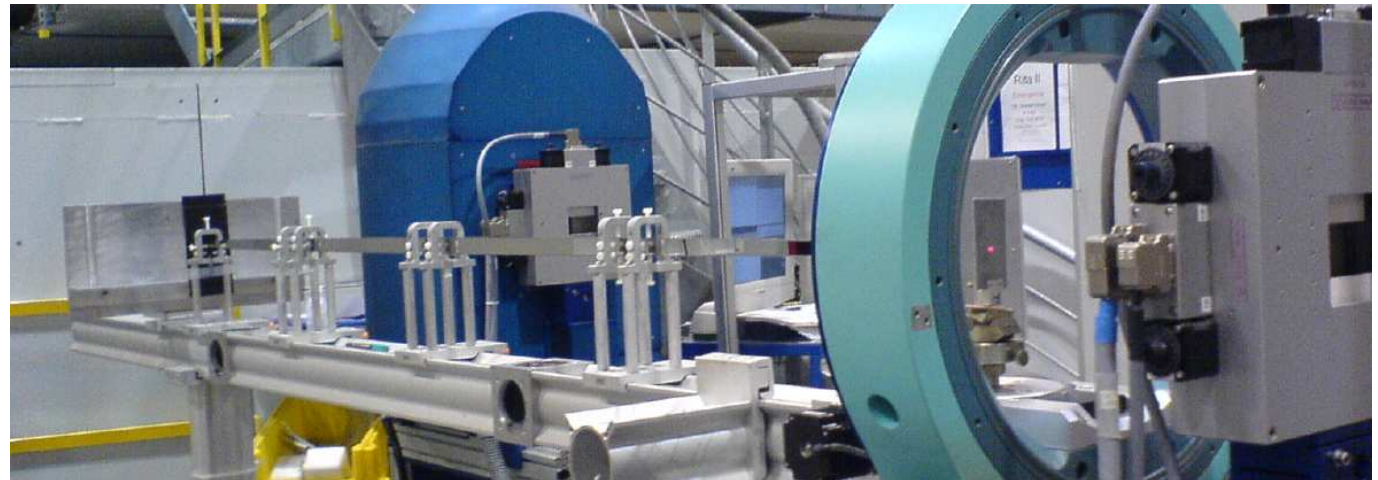
together with TUM

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



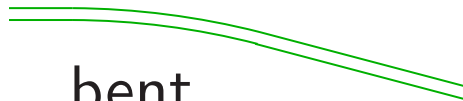
elliptic beam guide

simulations: U. Filges

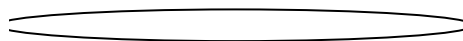
guide: 40 m, source/guide and guide sample: 1.8 m



straight guide



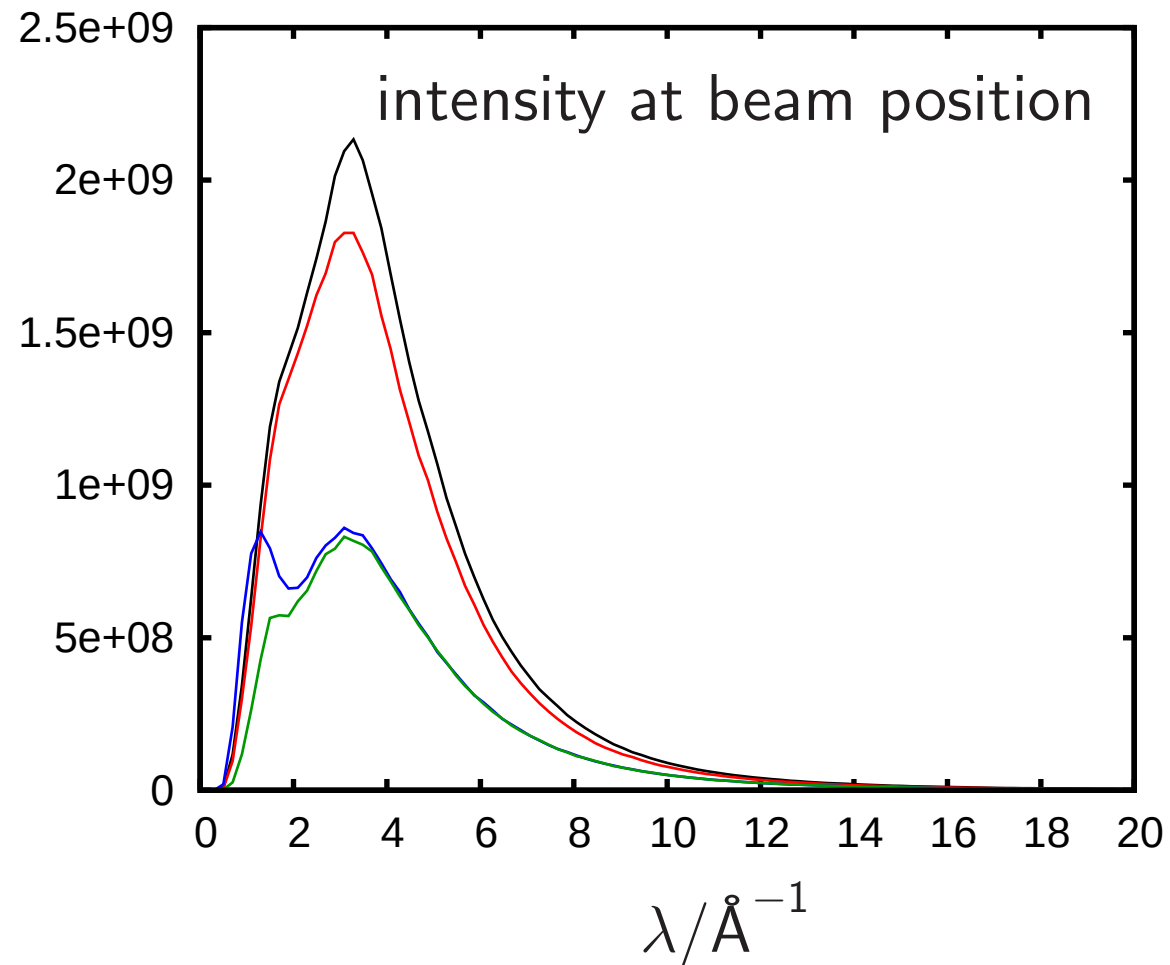
bent
straight guide



elliptic guide



elliptic guide
with absorber



elliptic beam guide

