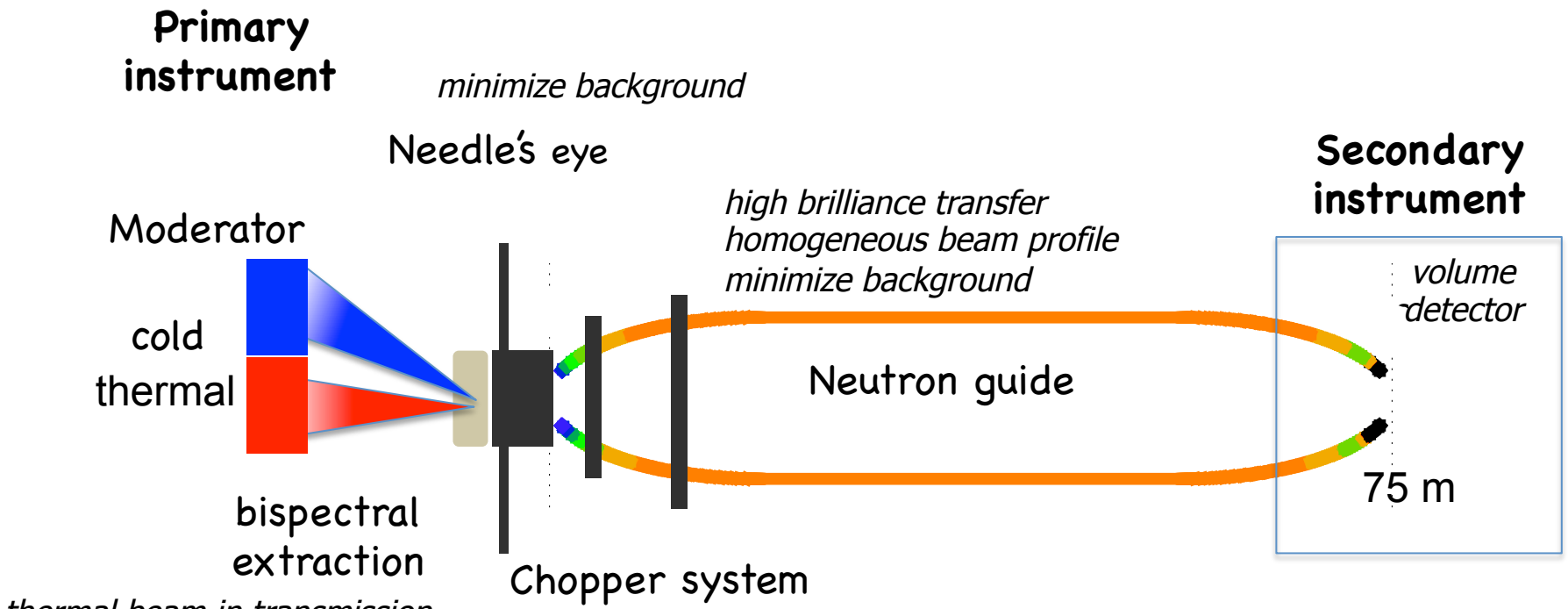
Bi-spectral powder diffractometer

guide

Werner Schweika

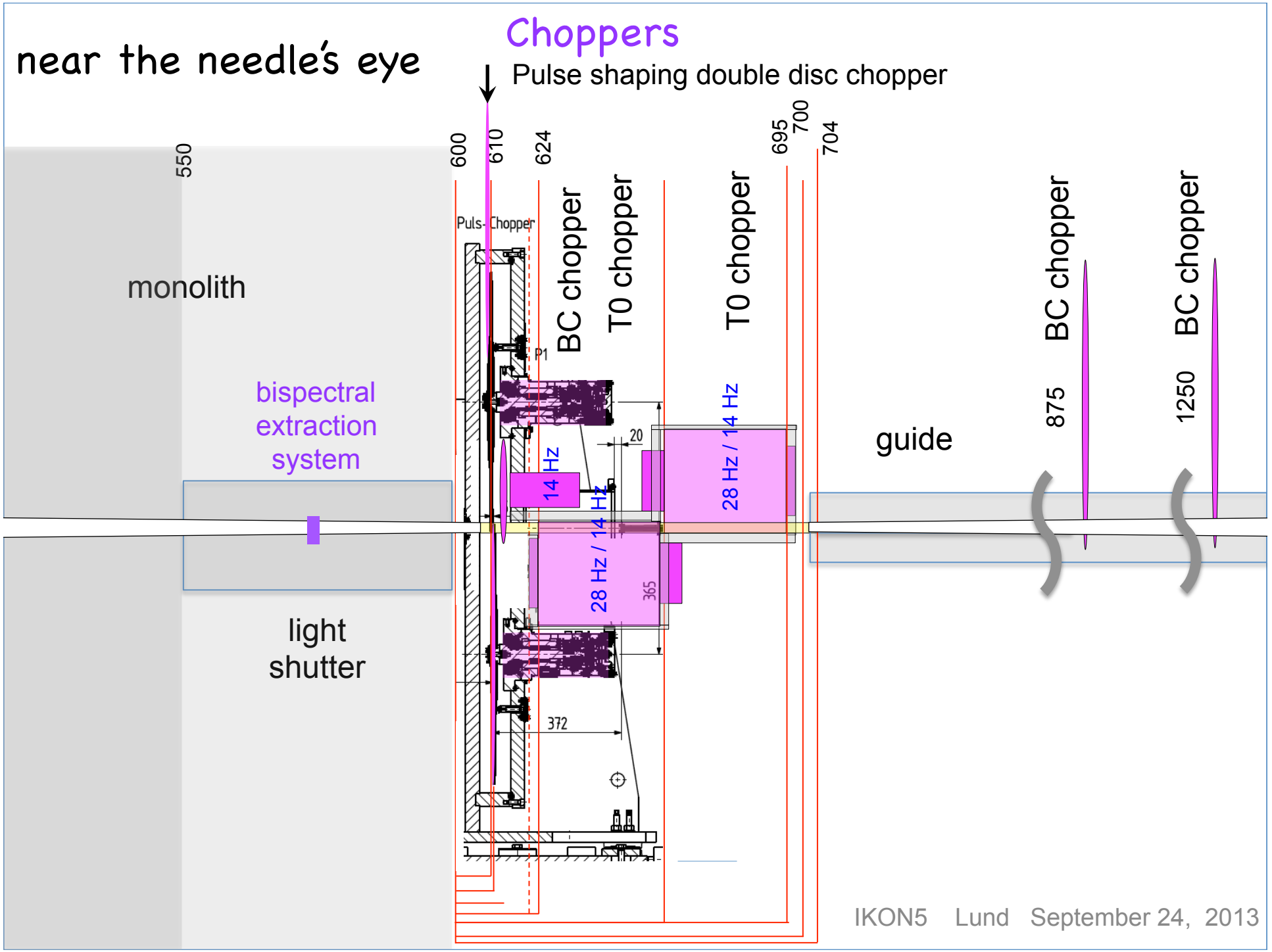
Instrument scheme and components



Choppers

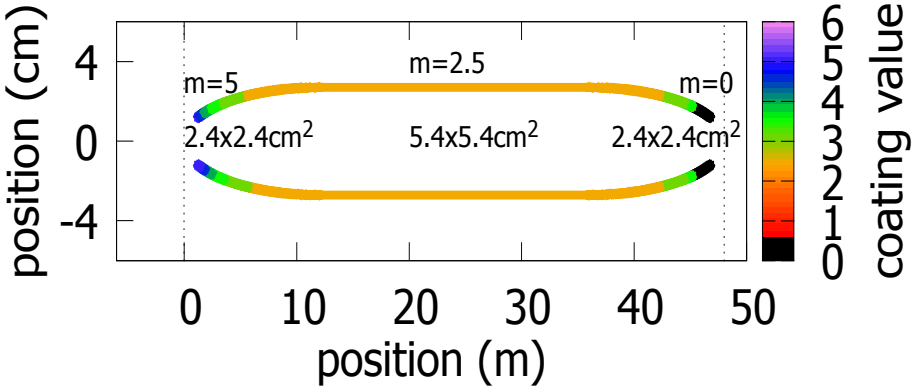
near the needle's eye

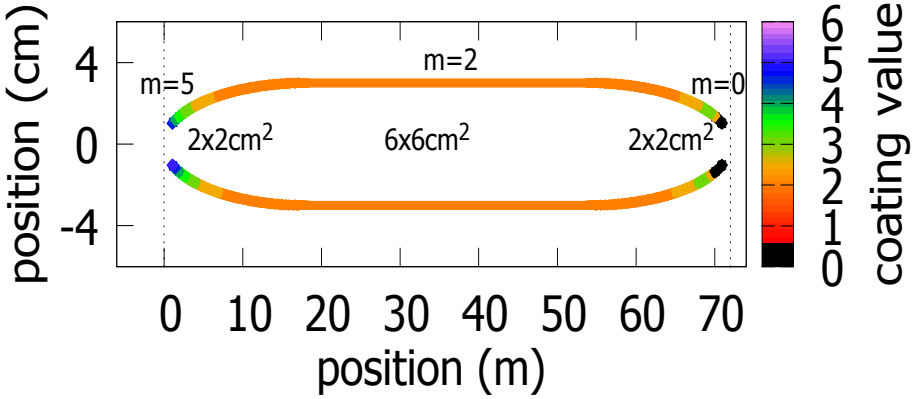
Pulse shaping double disc chopper

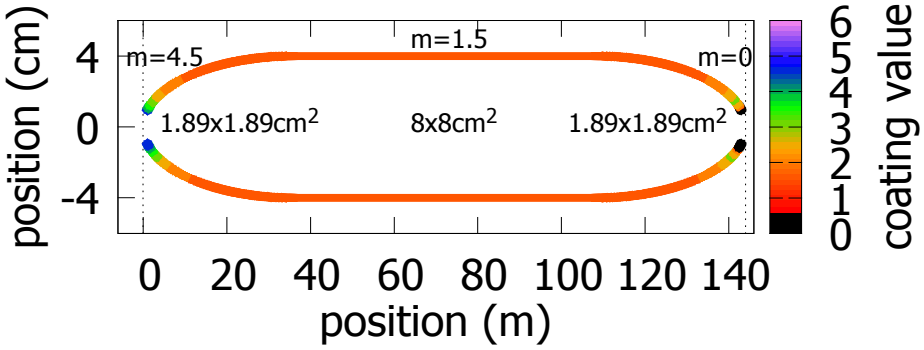


Neutron Guide simulations

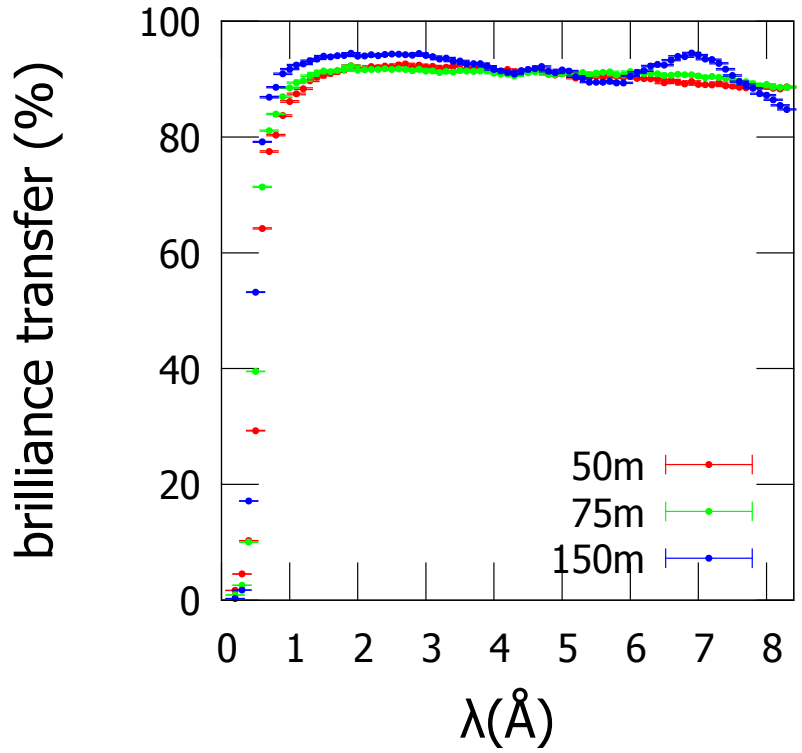
Nicolo Violini







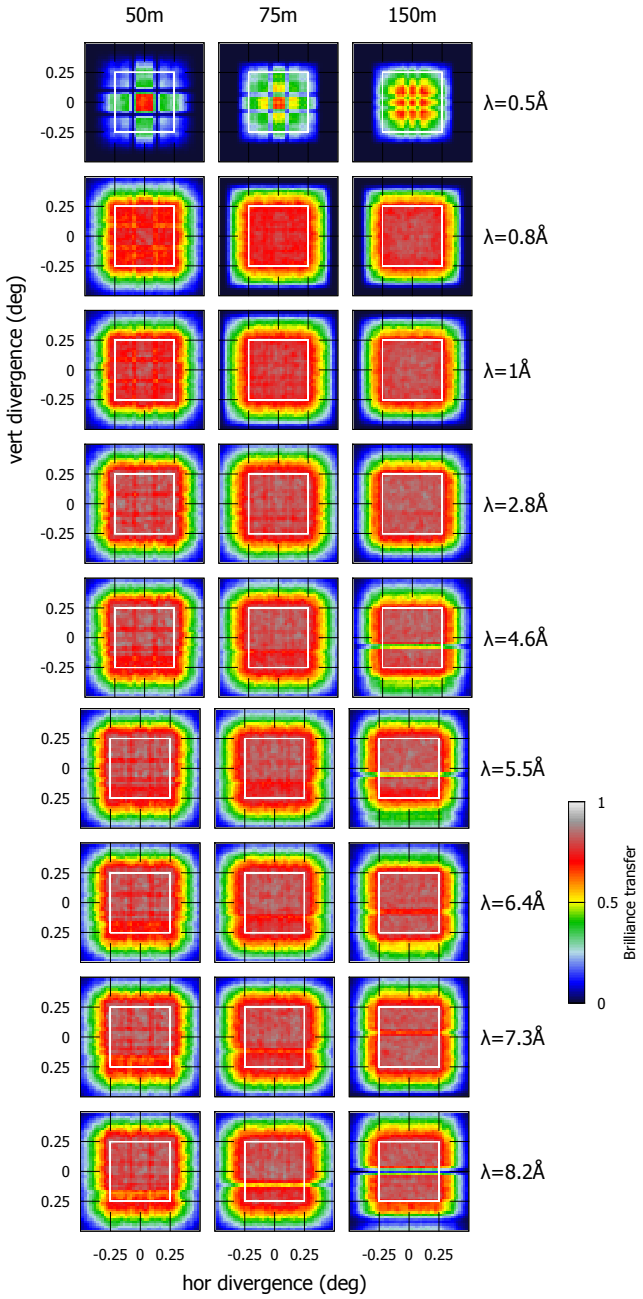
optimizing instrument length for the bispectral powder diffractometer

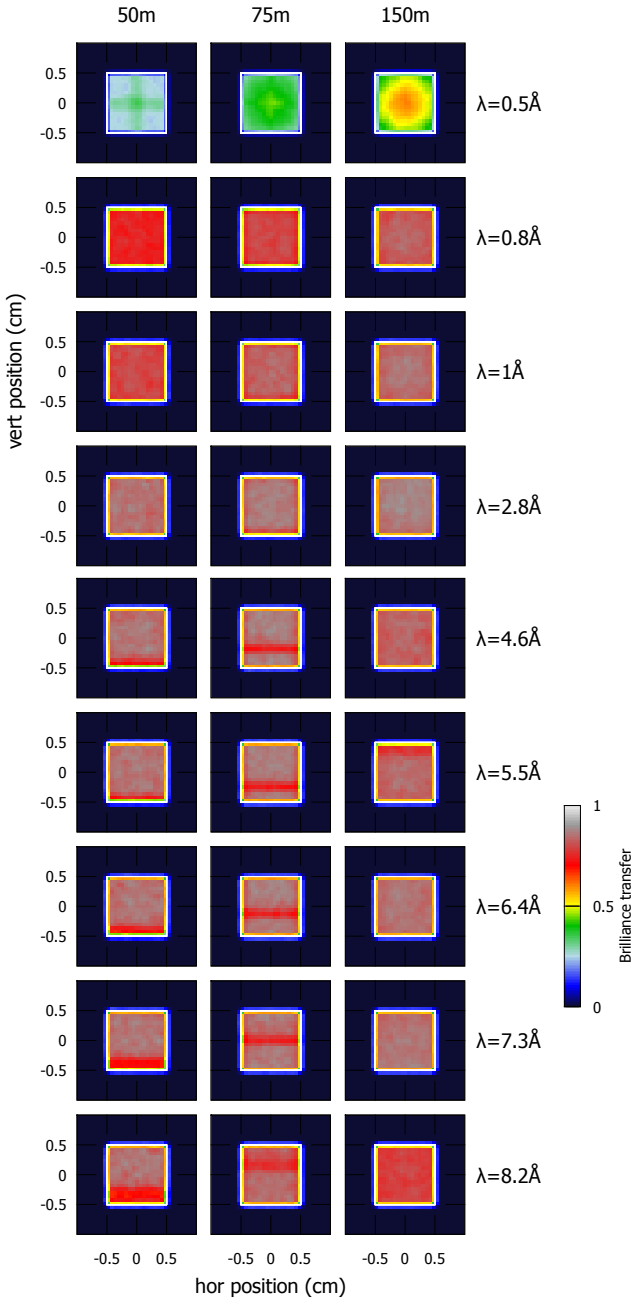


optimal coating - backtracing

A. Houben et al., *NIMA*, **2012**, *680*, 124.

Vertical opening at the pulse shaping chopper 2 cm

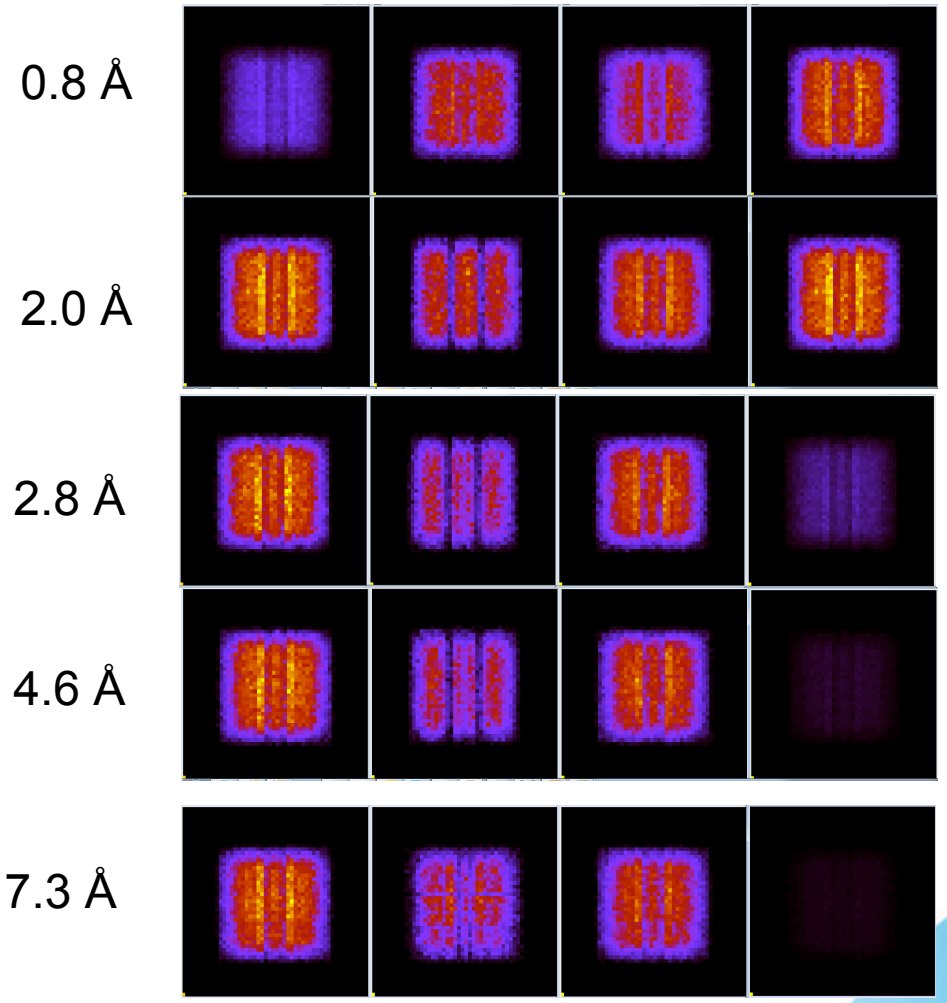




opening 3.5 cm at PSC

bispectral

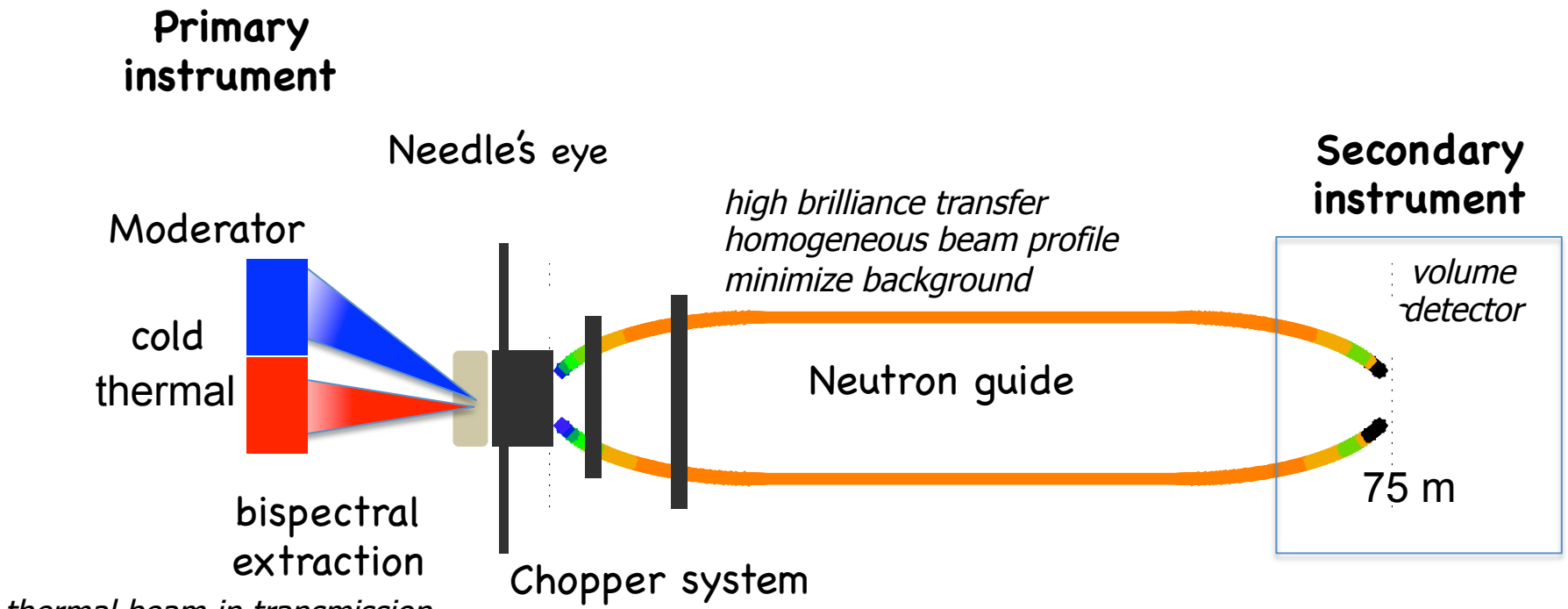
cold thermal

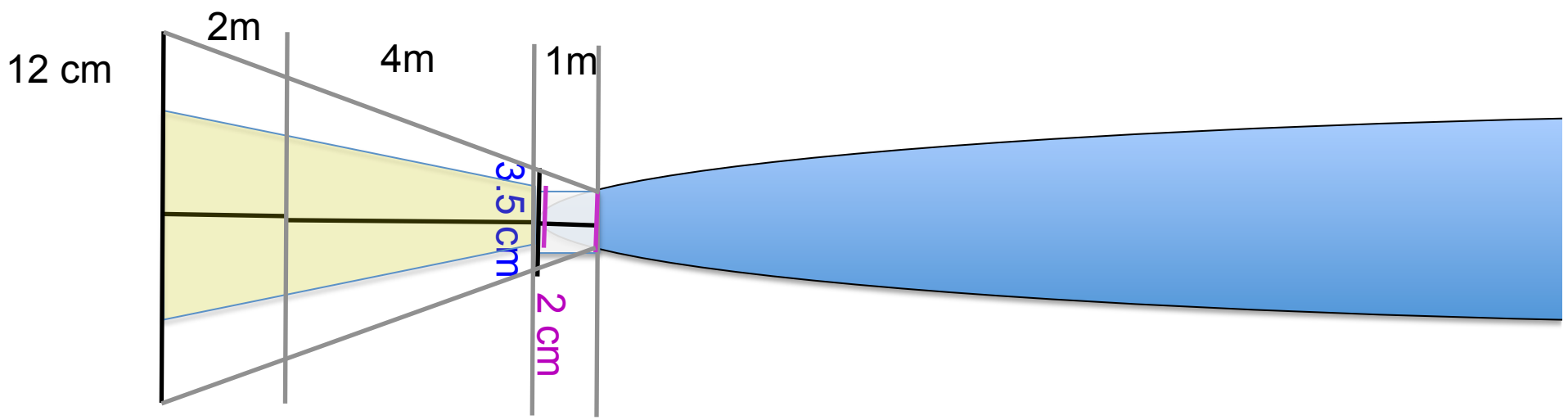


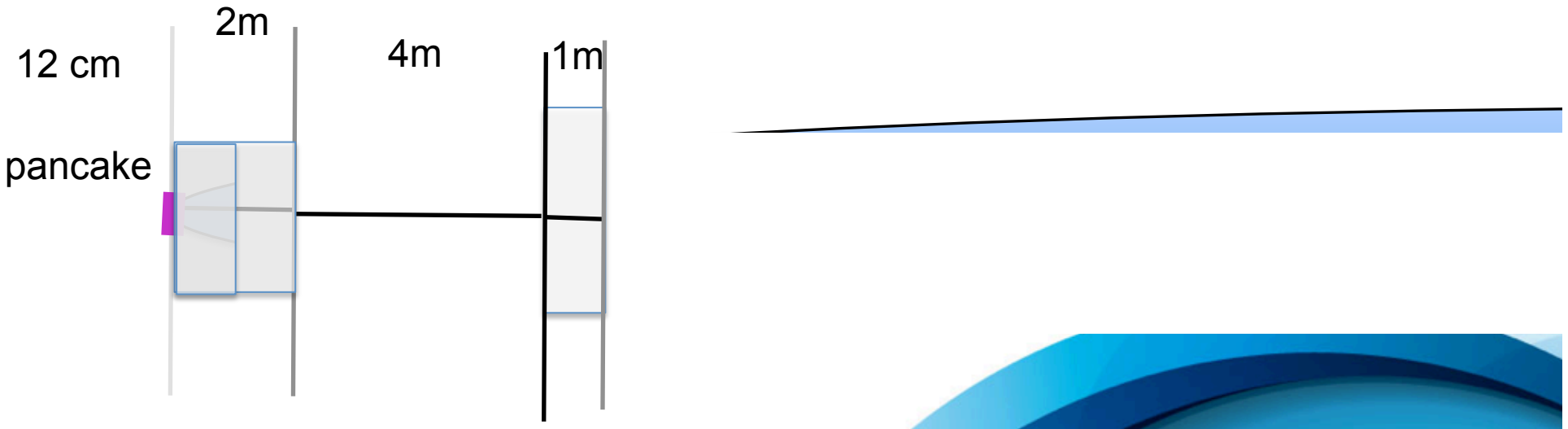
Divergence profiles

vertical
divergence distributions
are homogeneous

Instrument scheme and components

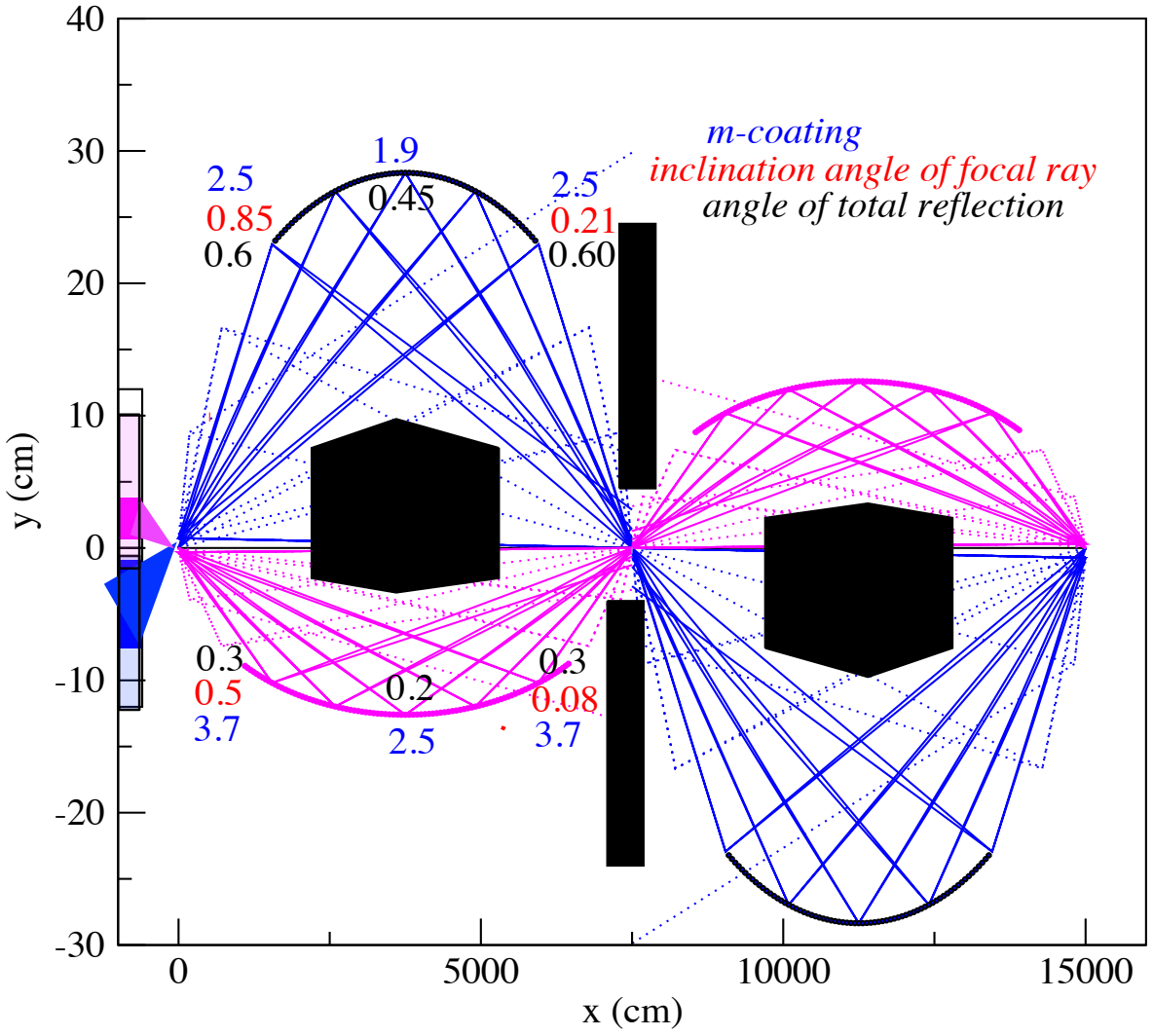



12 cm
2m
4m
1m
3.5 cm
2 cm

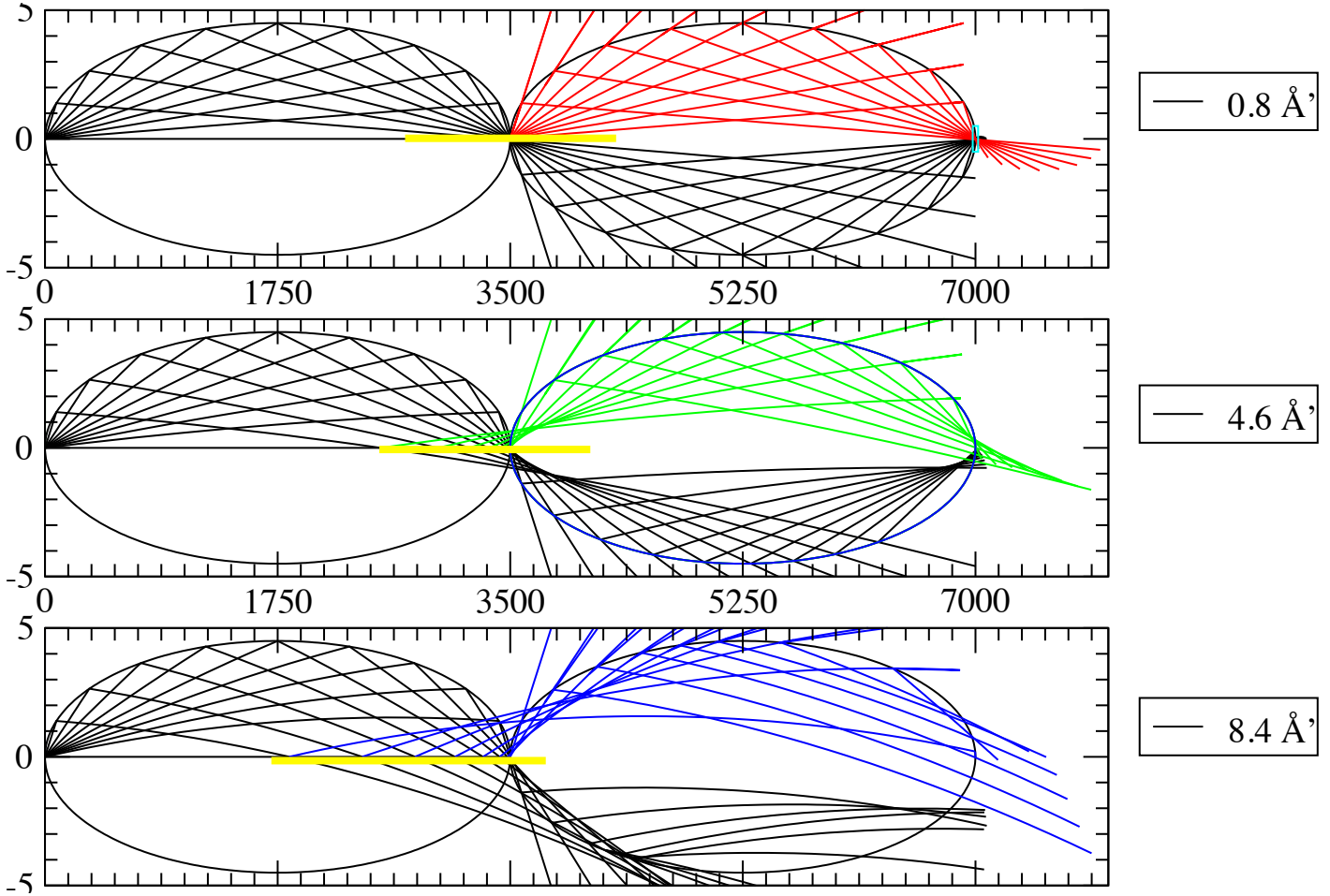

12 cm
pancake
2m
4m
1m

double elliptic guide or Selene ?

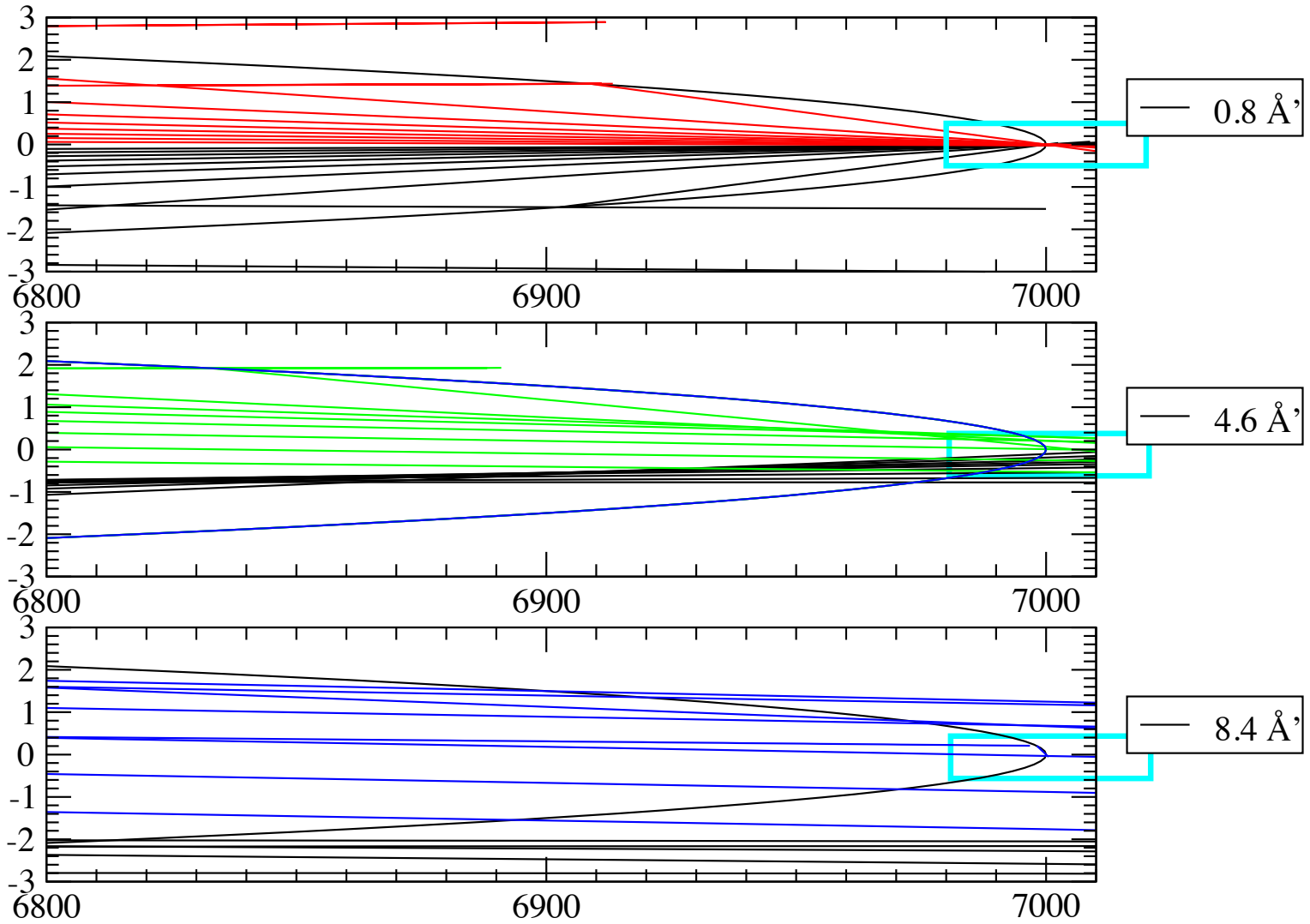
guide idea for
the single crystal
diffractometer



Gravitation effects in a double elliptic guide vs Selene guide (+ horizontal mirror)

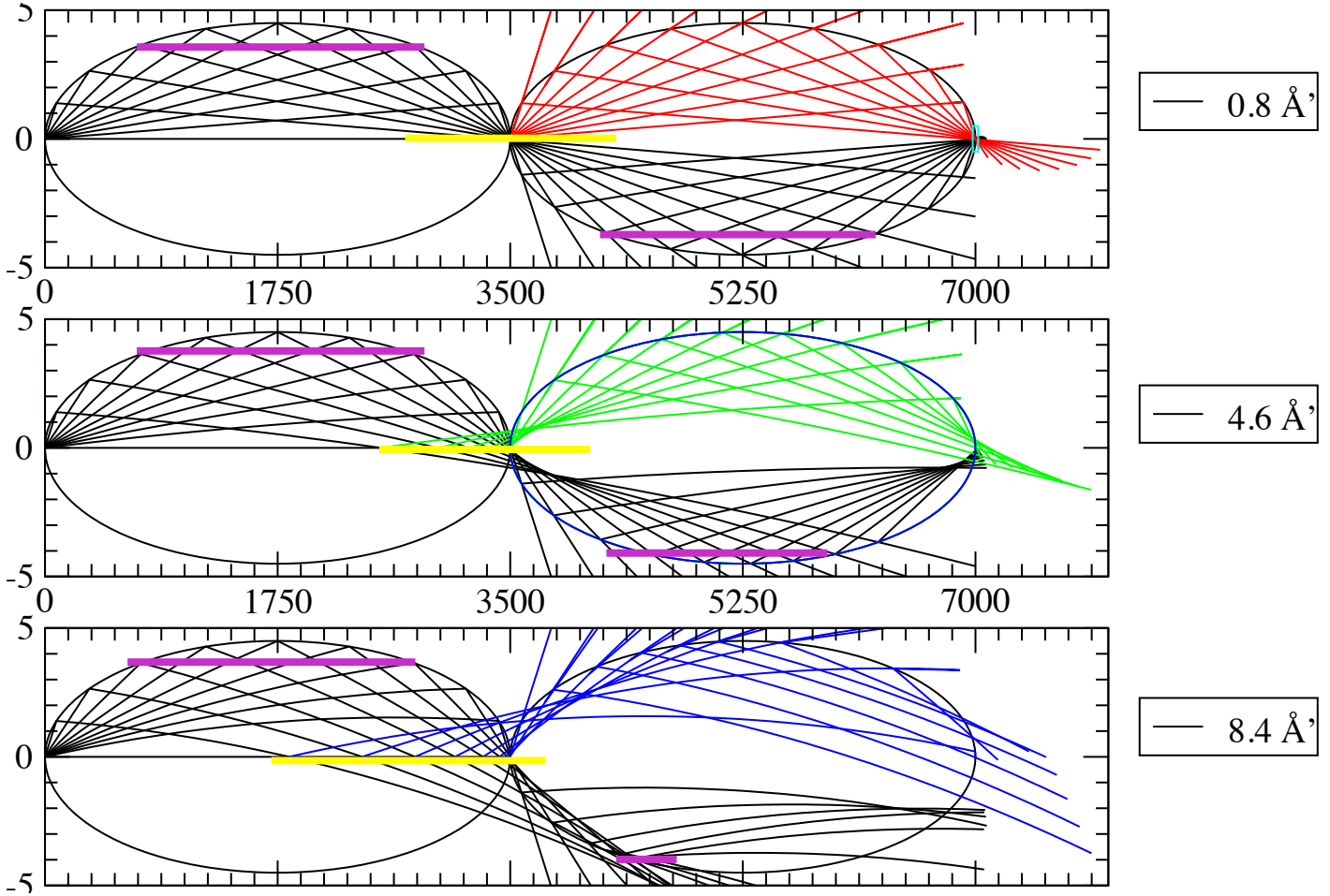


bispectral powder diffractometer

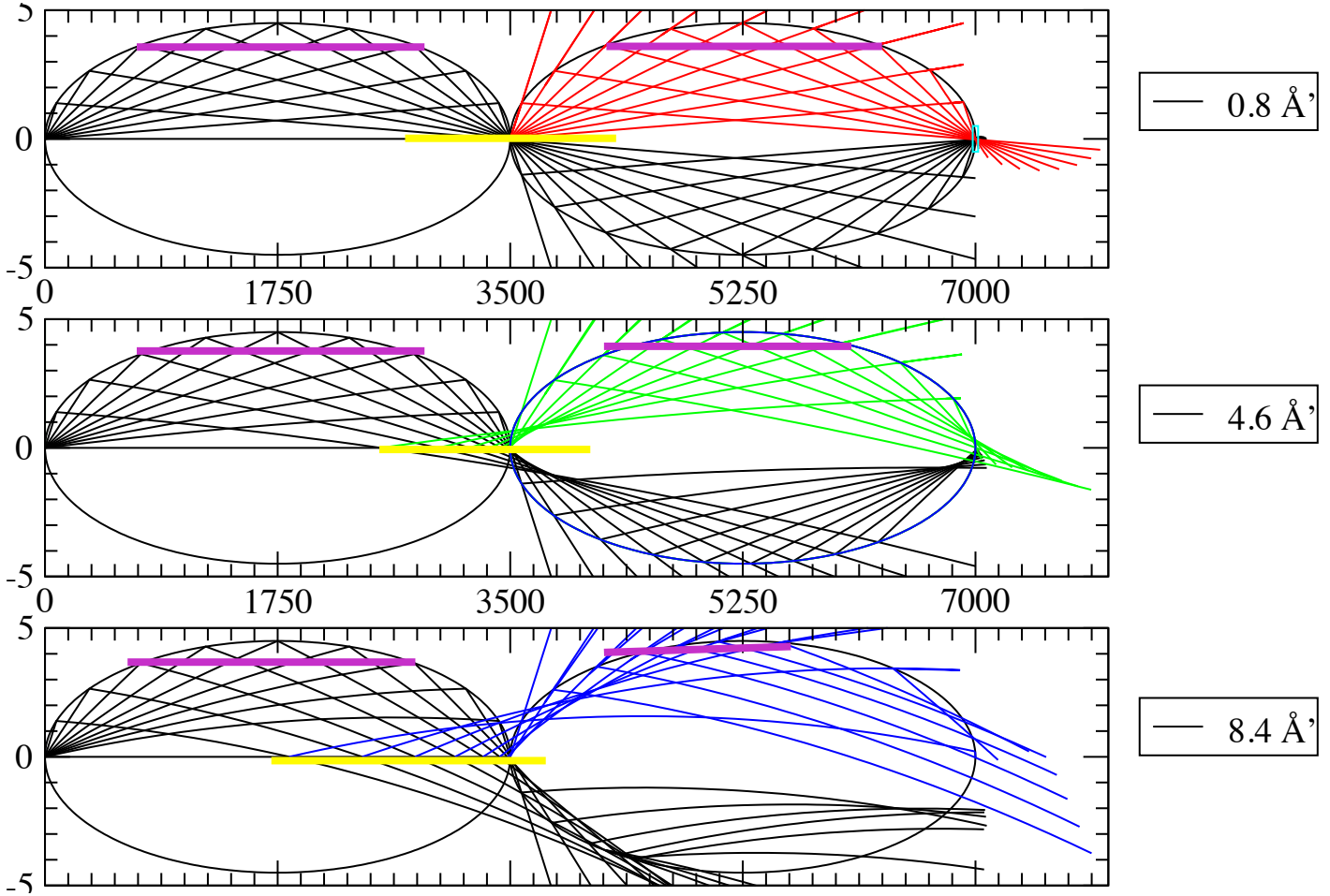


suggests source height >3cm

Gravitation effects in a double elliptic guide vs Selene guide (+ horizontal mirror)



Gravitation effects in a double elliptic guide vs Selene guide (+ horizontal mirror)



for powder diffraction, the next step:

coma aberration and gravitation

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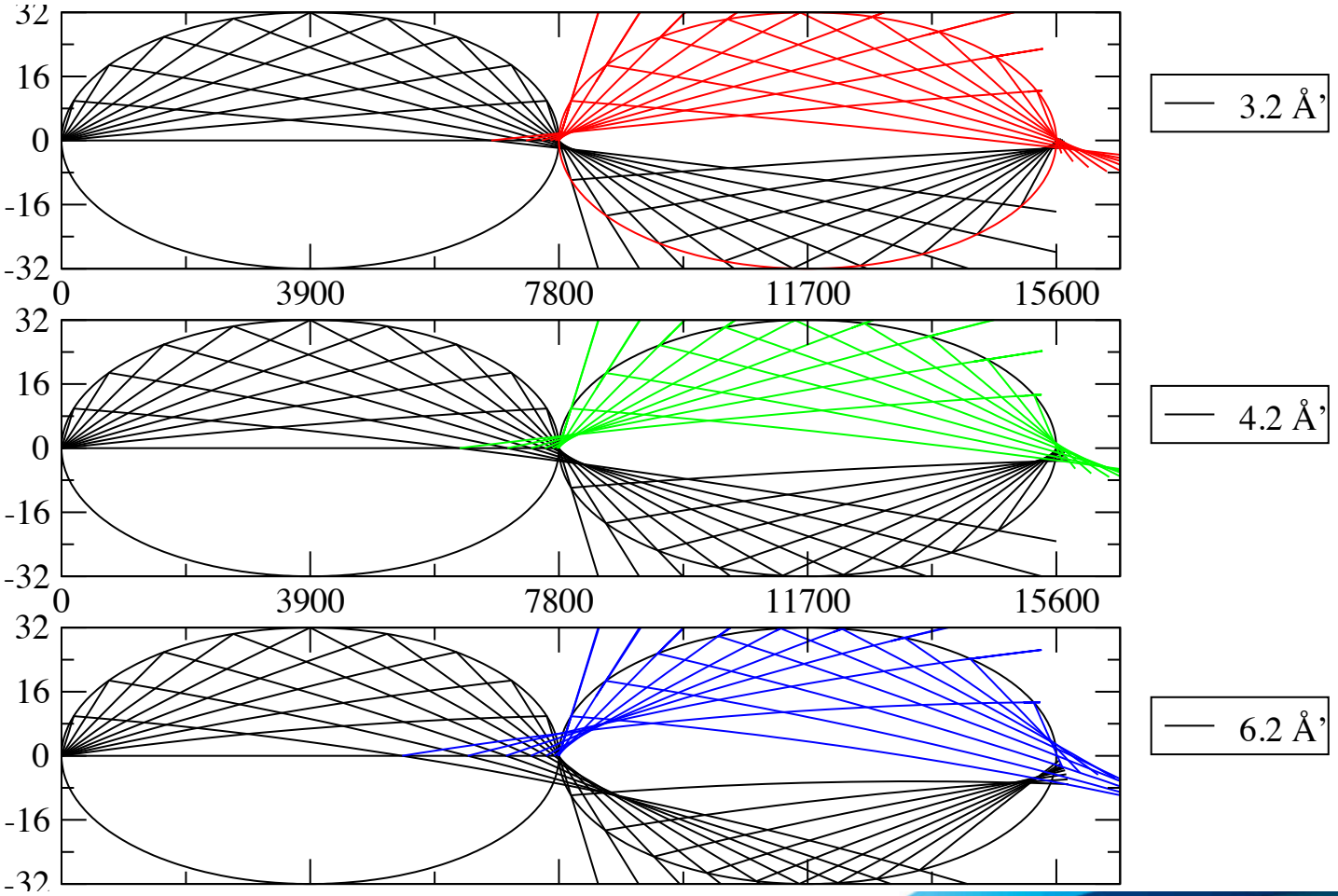
other instruments
elliptic guides fix divergence independent of lambda
straight guides fix $\Delta k_{transverse}$ (Q-resolution)

Which other possibilities do we have to change the moderator with better performance?

Can moderator and target be finalized in time, what is the background, etc.…?

Backscattering



Backscattering