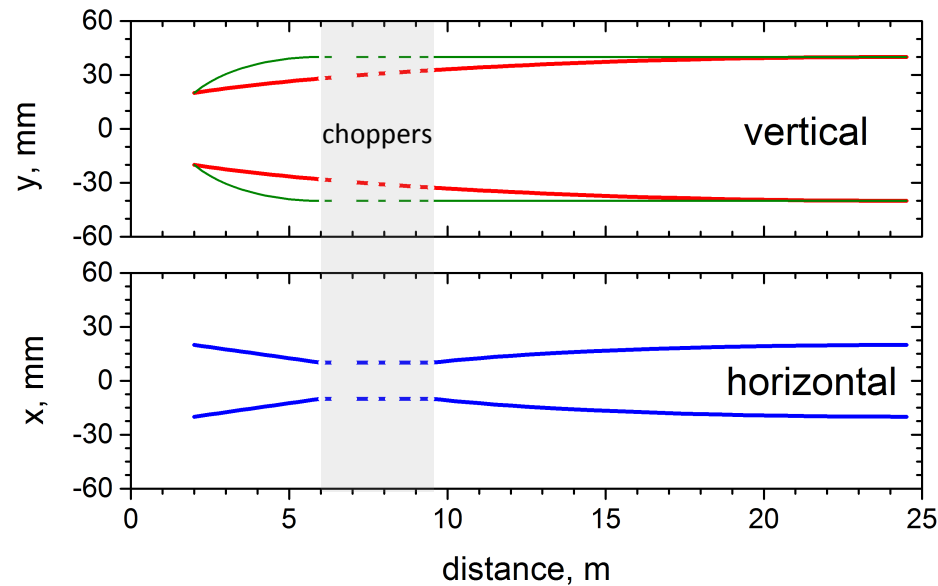
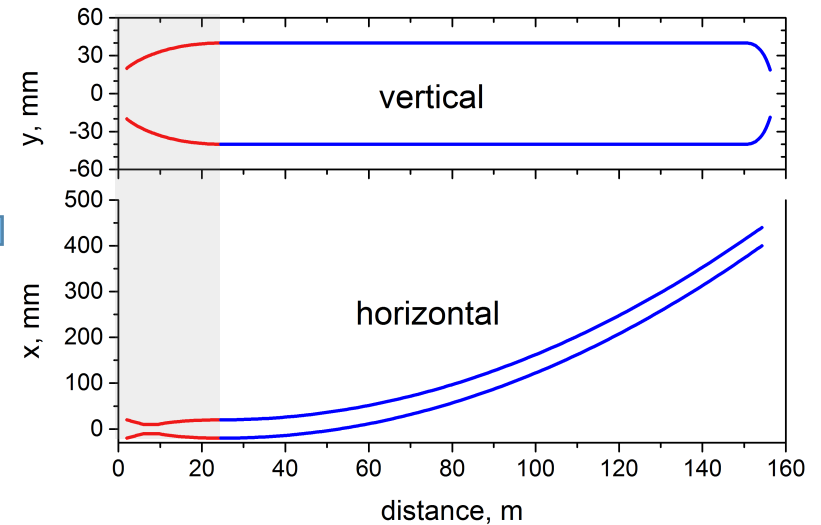


Engineering diffractometer (BEER)

vertical expansion { *variant 1: length=22.5 m*
variant 2: length = 4 m (before choppers)



BEER guides



optimization of vertical guide expansion

FOM: flux at the sample over $S=1 \times 1 \text{ cm}^2$, $\Omega=0.29 \times 1.7 \text{ deg}^2$
bandwidth: thermal $0.5 \dots 2.3 \text{ \AA}$, cold $2.0 \dots 3.8 \text{ \AA}$

guide properties

profile: elliptic or parabolic, flat segments $\Delta L = 0.25 \dots 1.0 \text{ m}$
mirrors: $m = 4$, waviness = $0.2 \text{ deg } (\sigma)$
simulation component: SGUIDE (SIMRES)

simplification

- no bi-spectral optics
- flat source in the beam axis
- no gravity

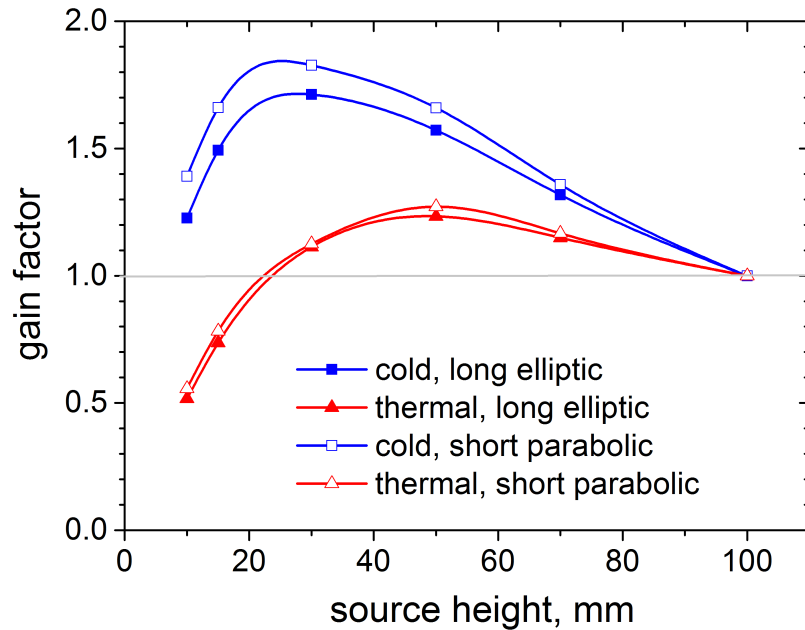
tried also:

gravity, smooth profile
 = no effect

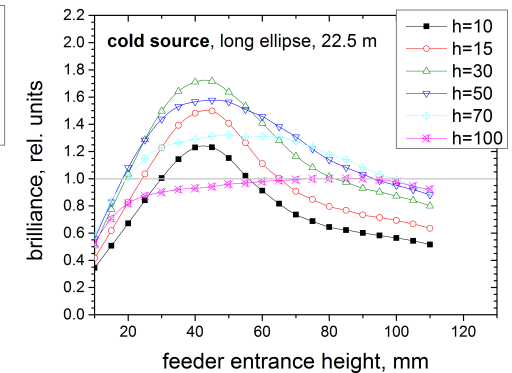
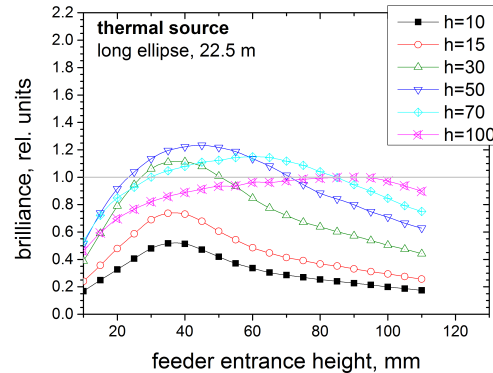
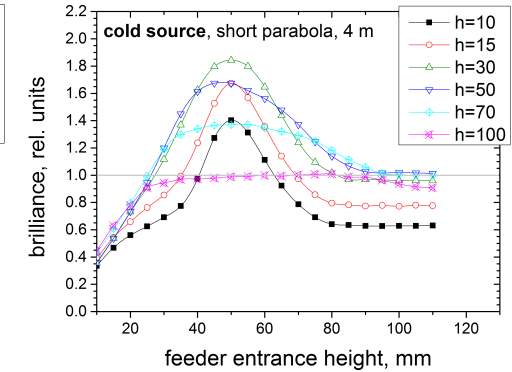
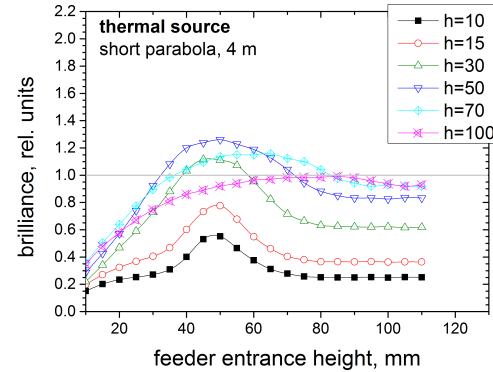
Engineering diffractometer (BEER)

gain factors for optimized guides

reference: $h = 100$ mm, straight guide



guide optimization



Summary

bandwidth	optimum height	gain
thermal, 0.5 .. 2.3 Å	5 cm	1.2
cold, 2.0 .. 3.8 Å	3 cm	1.8

thermal neutrons are important:
height ~ 4 cm is a good compromise