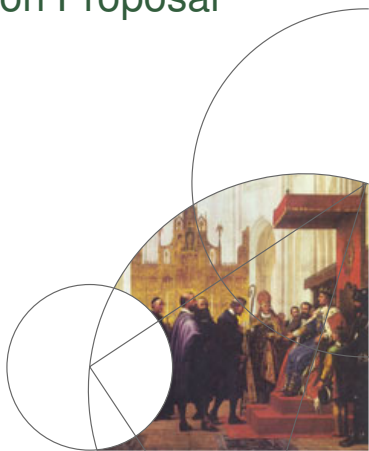




# Compact SANS Construction Proposal

## Instrument Front-end

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# The Instrument Team

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# Concept

The instrument is designed to be a high flux broad q-range SANS intended primarily for biological samples.

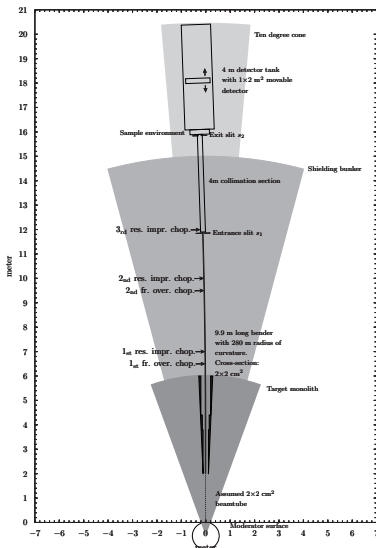
This placed the following requirements on the beam delivered by the instrument front end:

- Beam divergence: up to  $\pm 0.7^\circ$
- Beamspot radius: 4 mm
- No frame overlap.
- Wavelength range of 3-18.9 Å.
- Good cutoff of lower wavelengths.
- Relaxed wavelength resolution.

Sample position was fixed at 16 m from the source, as a compromise between bandwidth, wavelength resolution, and background reduction.

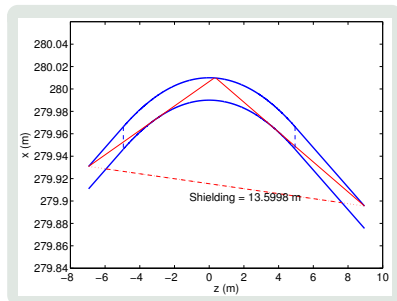


# Overview

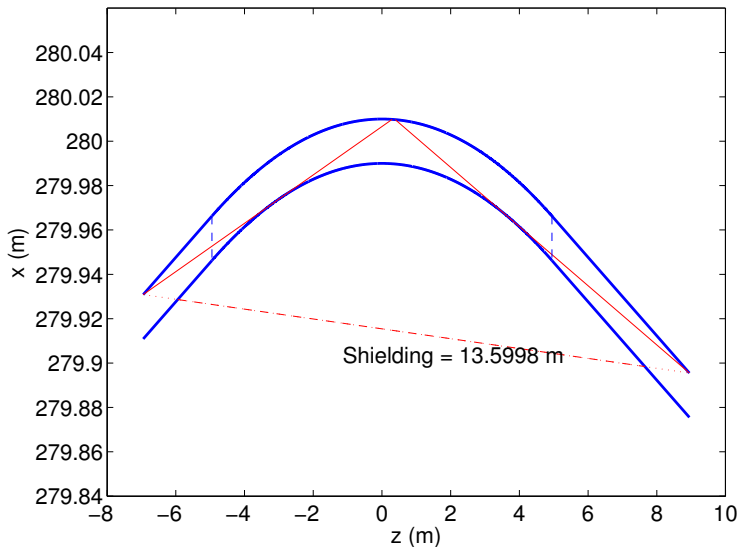


# Guide

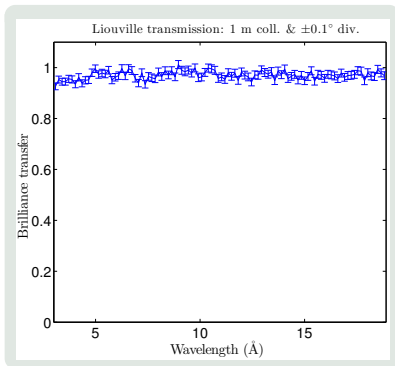
Width & height: 2 cm.  
Start and end: 2-11.9 m.  
Radius of curvature: 280 m.  
Twice out of LoS.  
Minimum shielding: 13.6 m.  
Outer wall:  $m=2.4$ .  
Inner wall:  $m=1$ .  
Top and bottom:  $m=2.1$ .



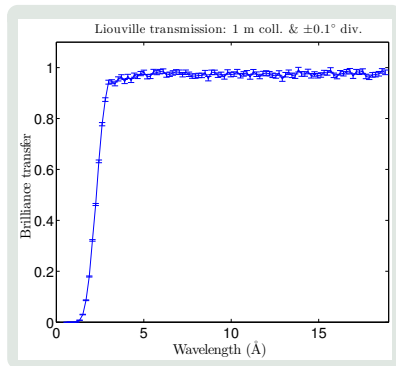
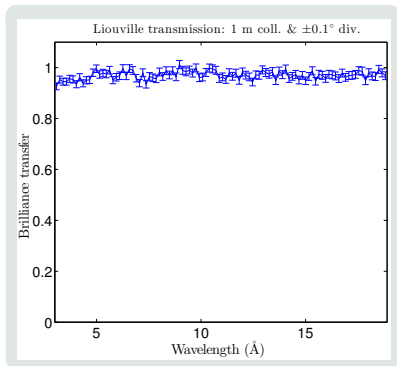
# Guide



# Brilliance Transfer



# Brilliance Transfer



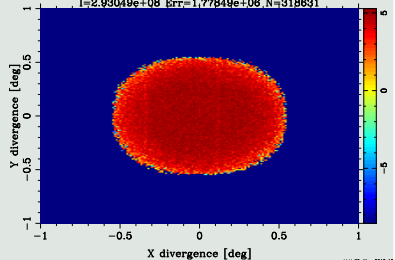


# Collimation Section

Collimation length: 1-4 m.  
1st slit radius: 8 mm.  
2nd slit radius: 4 mm.  
Extra guide segments when  
not using the full 4 m  
collimation length.

## Divergence at sample

[LOG] divergence\_monitor\_sample [divergence\_monitor\_sample.sim]  
X0=0.00849395; dX=0.219032; Y0=-0.00211606; dY=0.221492;  
I=2.93049e+08 Err=1.77849e+06 N=318631

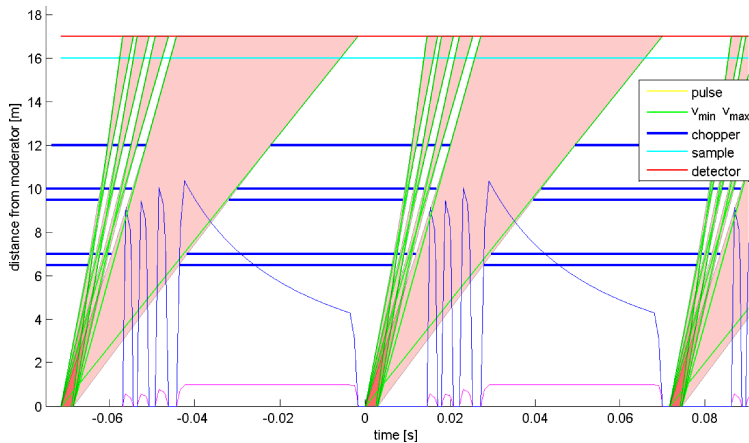


# Resolution and Flux

$L_1$ (m)	$d\lambda/\lambda$ at 4Å	$d\lambda/\lambda$ at 8Å	$d\lambda/\lambda$ at 12Å	flux (n/s/cm <sup>2</sup> )
1	17%	8%	6%	$12 \times 10^8$
2	16%	8%	5%	$3.3 \times 10^8$
4	14%	7%	5%	$0.88 \times 10^8$
1 (C)	9%	8%	6%	$4.7 \times 10^8$
2 (C)	8%	8%	5%	$1.3 \times 10^8$
4 (C)	7%	7%	5%	$0.34 \times 10^8$



# Chopper System



# Chopper System

## Chopper Positions:

Bandwidth choppers: 6.5 & 9.5 m.

Resolution choppers: 7, 10, & 12 m.

