



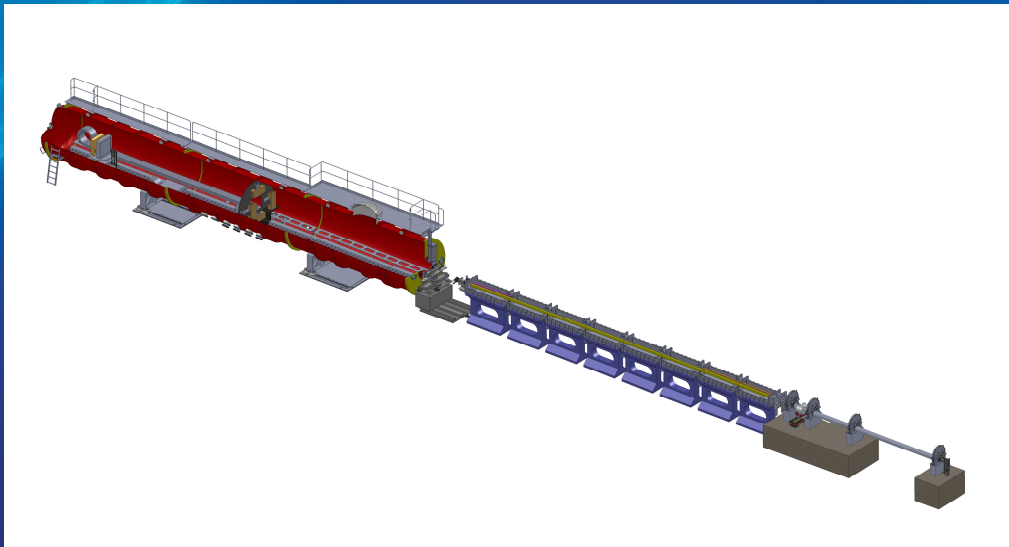
Australian Government

Ansto

Nuclear-based science benefiting all Australians



BILBY: new Time-of-Flight Small Angle Scattering instrument at ANSTO



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BILBY project

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Electrical
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Radiation shielding
John Osborn
Fernando Esposto

DAE/computing
Andrew Berry
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HMI
ILL
Saclay
NIST
SNS

Project timeline

Nov 2009

General design concept: evaluation of various set-up; NIST Workshop (USA)

Feb 2010

1st Instrument Advisory Team meeting

Apr 2010

Approval for Time-of-Flight instrument
Budget/Scope Approval

Mar 2011

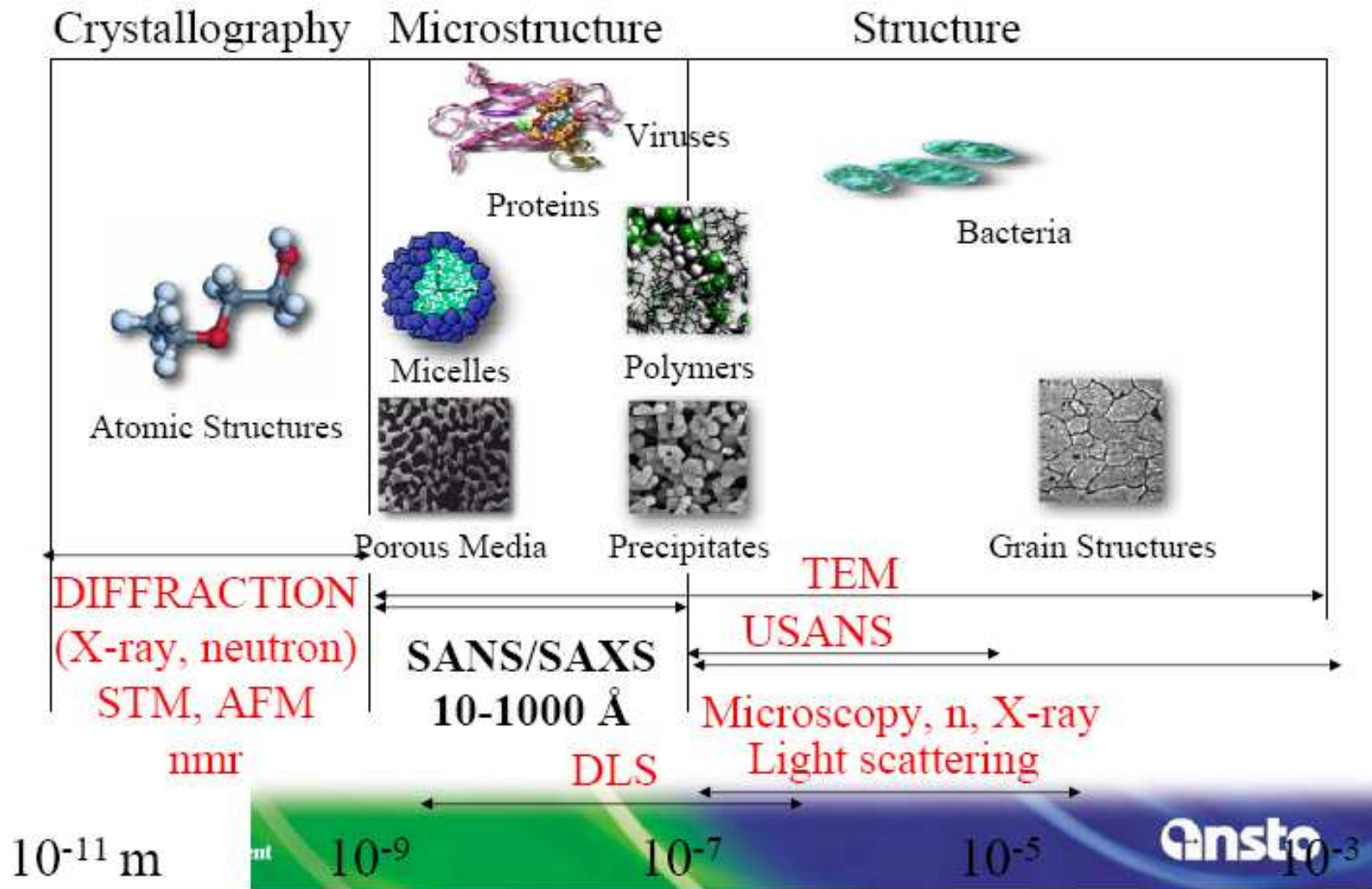
Instrument critical design review



Jun 2013

Cold commissioning phase finalised

Small Angle (Neutron) Scattering



Special features of the new instrument

TOF mode:

flexible instrument resolution; extended Q-range.

Study kinetics; materials with small structural heterogeneities.

Slit mode:

very low Q.

Study of objects usually studied with USANS.

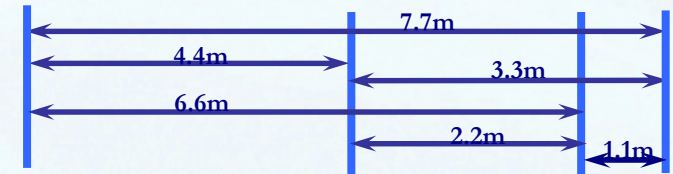
Two detectors:

single-panel front and back four panels plus extra high-resolution to operate in slit mode;

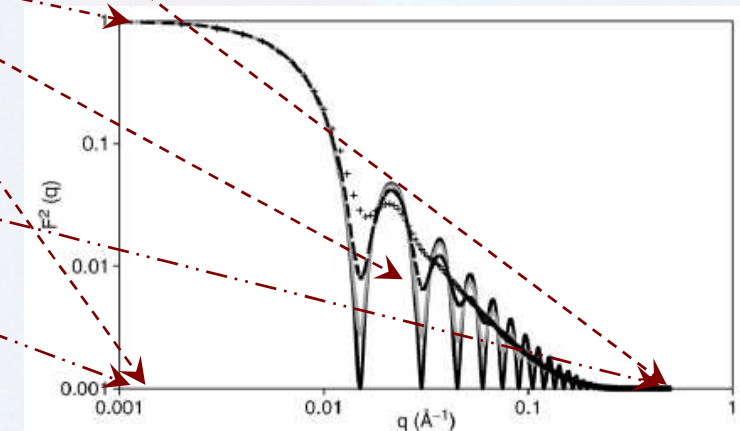
Sample size:

up to 2cm diameter for monochromatic and time-of-flight mode;

width of mm, height 20 → 100mm for slit mode.

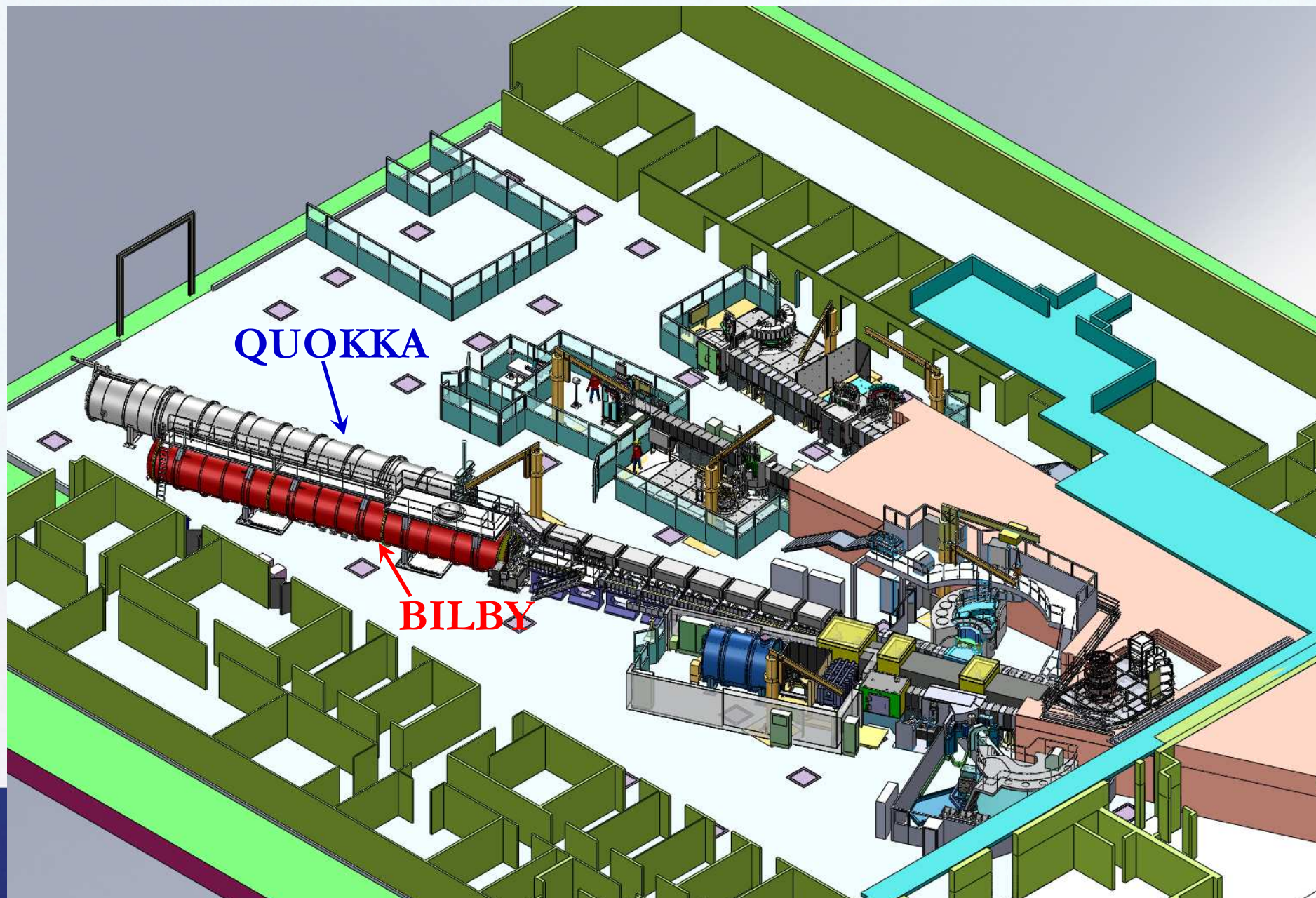


D33 SANS at ILL
Dr Charles Dewhurst



set of six $\Delta\lambda/\lambda$: 4%÷30%; λ : 2 \AA ÷20 \AA
 Q_{max} =1.7 \AA^{-1} (λ =2 \AA), for front panels

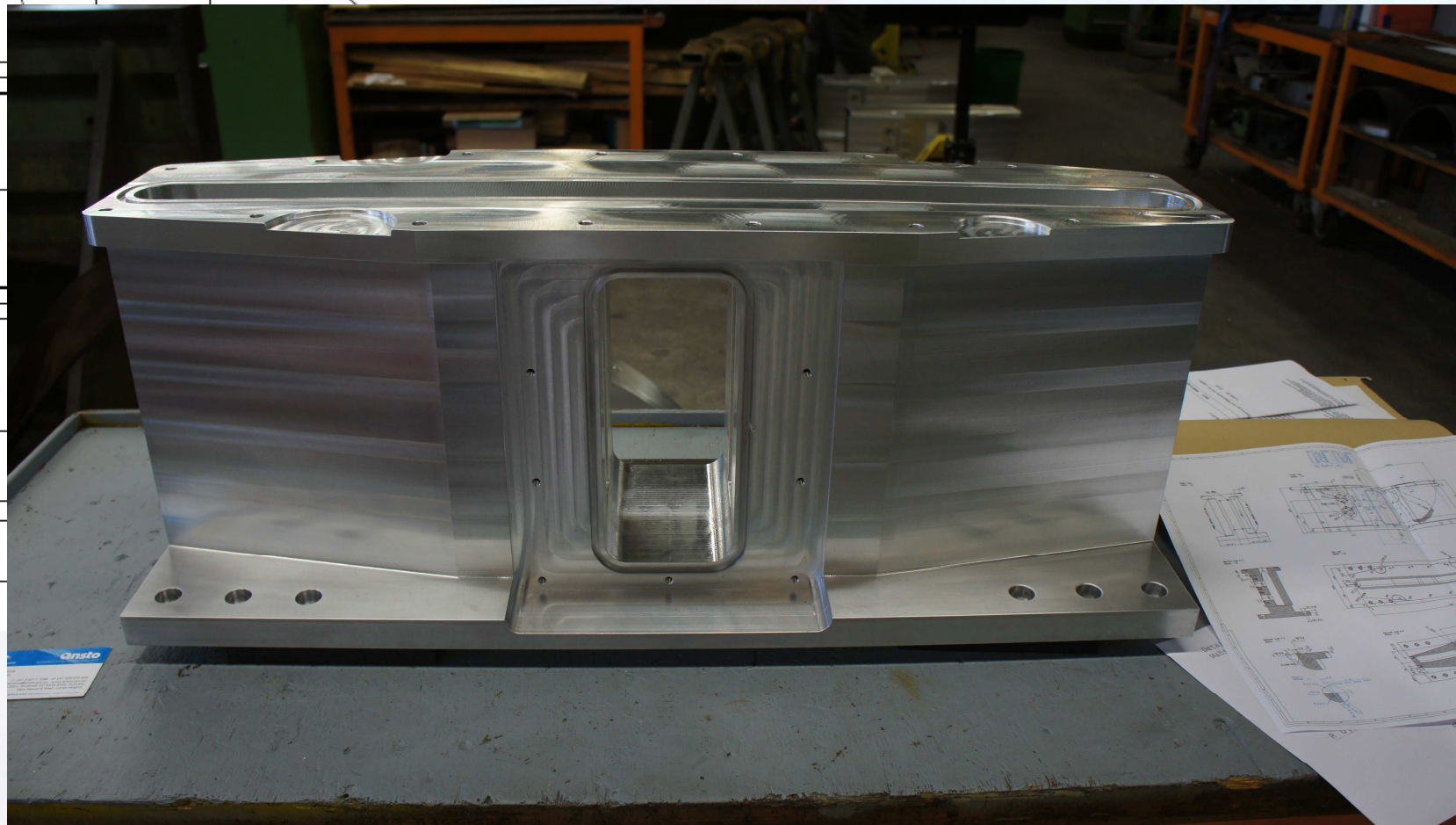
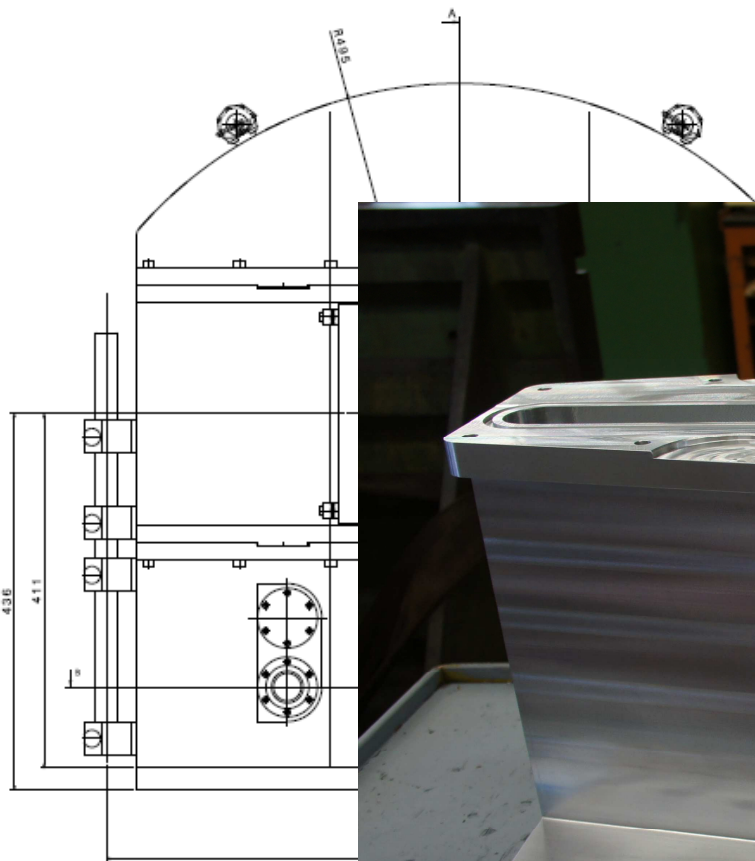
Small Angle Scattering: Quokka & Bilby



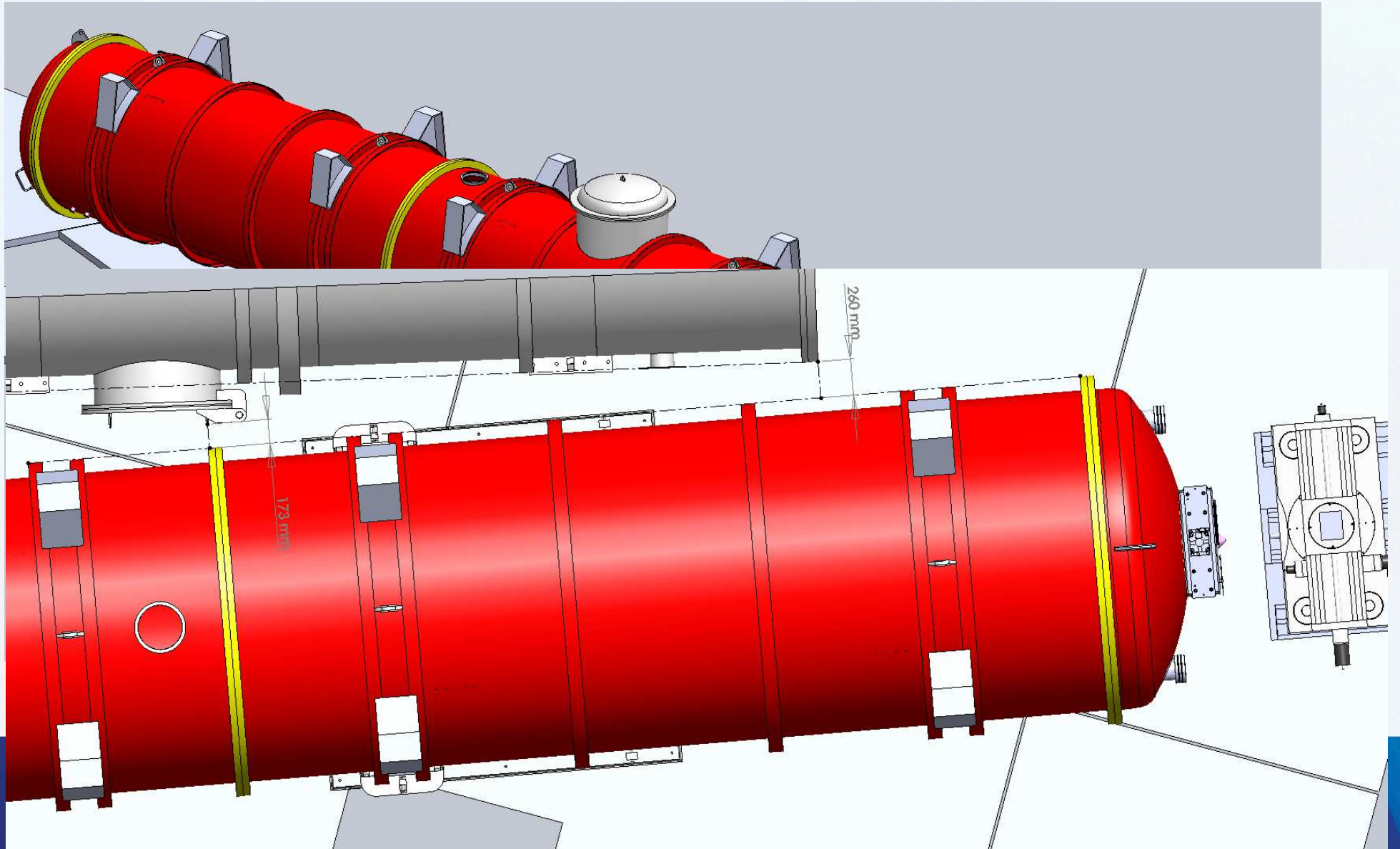
Electrical equipment on site



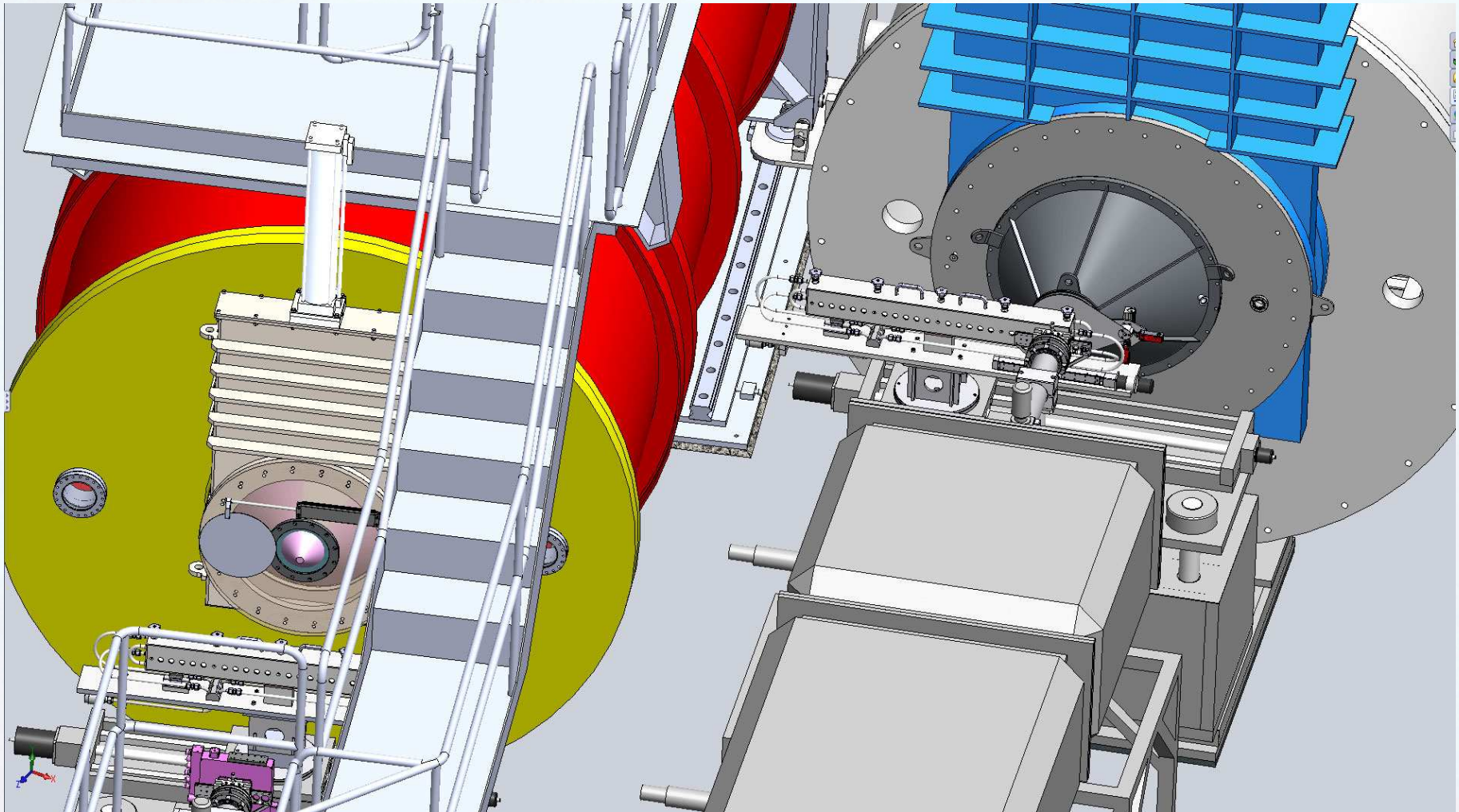
Choppers (Astrium, Germany)



Detector Vessel (Advanced design consulting, USA)



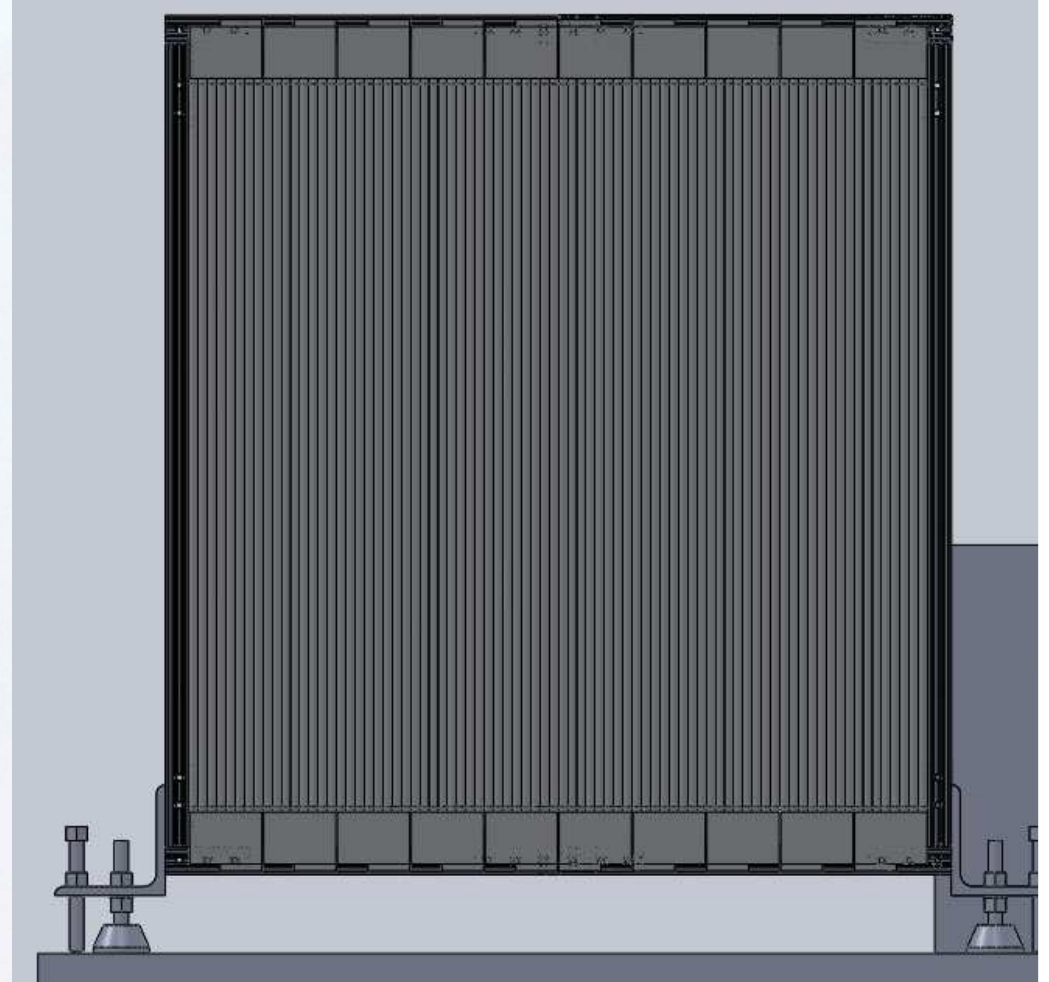
Sample area



Detectors (GE, USA): 8mm \varnothing tubes

Back detector: square area 64cmx64cm

Front detector:
four curtains, 32cmx64cm each



International Small-Angle Scattering Conference 2012



Sydney | Australia
18-23 November 2012

www.sas2012.com