

Variable collimation snout for Quokka (Small angle instrument)

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In 2007 ACNS (formally known as The Bragg Institute) commissioned its first small angle instrument known as Quokka.

Quokka has a fixed collimation tank of 20 meters and a sample area gap of 960 mm to allow for a variety of sample environment equipment from superconducting magnets to simple 20 position sample changers.

The challenge was to keep the distance from the sample environment equipment to the fixed collimator section to a minimum to minimise air scattering.

Originally this was done by placing fixed lengths of evacuated aluminium tubing onto the fixed collimator. Unfortunately this system was time consuming and did not always optimise the gap between the sample environment and fixed collimator.

In 2016 to 2017 the ACNS Scientific Operations group and Quokka's instrument scientist successfully developed and built a variable collimation snout utilising motor driven linear slides and welded bellows. This new system is totally non-magnetic as a result of the titanium welded bellows and has infinite adjustment over a range of 800mm. This allows for the recently installed polarisation system on Quokka to be utilised with all available sample environment equipment.

Changing the length of the snout went from hours to just a few minutes with a repeatability greater than 0.1mm over the entire length.

Formal Invitation Letter Required

Yes

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