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# Temperature Control of Crystal Optics

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The temperature control of the crystal optics is critical for meV-resolution Inelastic Scattering Beamlines. For 1 meV photon energy resolution, the absolute temperature stability of the crystal optics must be below 4 mK to ensure the required stability of lattice constant stability required. The temperature control enables setting the absolute temperature of individual crystal, making it possible to align the reflection energy of each crystal's rocking curve thereby maximizing the reflectivity of the crystals.

Using PT1000 sensors, Keithley 3706A 7.5 sensor scanner, and Wiener MPOD LV power supply, we were able to achieve absolute temperature stability below 1 mK for several asymmetrically cut analyzer crystals. The EPICS ePID record was used for the control of the power supplies based on PT1000 sensor input that was read with 7.5 digits accuracy Keithley 3706A scanner.

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