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Amor - an angle and energy dispersive reflectometer

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In 2022, the neutron guide upgrade program at PSI was used to replace the old guide of the neutron reflectometer Amor by a full-scale *Selene* optics. In this context also a new polariser and a high-resolution detector were installed, and since then also the chopper and instrument electronics have been replaced.

The *Selene* optics essentially consists of 2 subsequent elliptic reflectors (each 9 m long) which map the virtual source opening (down to $0.5 \times 2 \text{ mm}^2$) to the sample position 30 m downstream. The resulting minimum beam spot there is $1 \times 3 \text{ mm}^2$. A transmission polariser is placed behind the first mirror in the convergent beam. It has the shape of an equiangular spiral so that it provides the same angle of incidence across the full divergence of 1.6 deg.

This high divergence (in both directions) enables high-intensity specular reflectometry, where the scattering angle is obtained from the spacial resolution of an area detector. We use technology developed at the ESS for their reflectometers Estia and Freia. The spatial resolution is $0.5 \times 4 \text{ mm}^2$ and its count rate capability greatly exceeds the demands at Amor.

All these components are installed, operational and tested. Sadly this can not be stated for the instrument electronics. The delay results from the prioritisation after the upgrade, followed by hardware shortages due to the pandemic and more recently the Russian war. The plan is that hot commissioning starts midyear and user operation in the second proposal cycle.

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