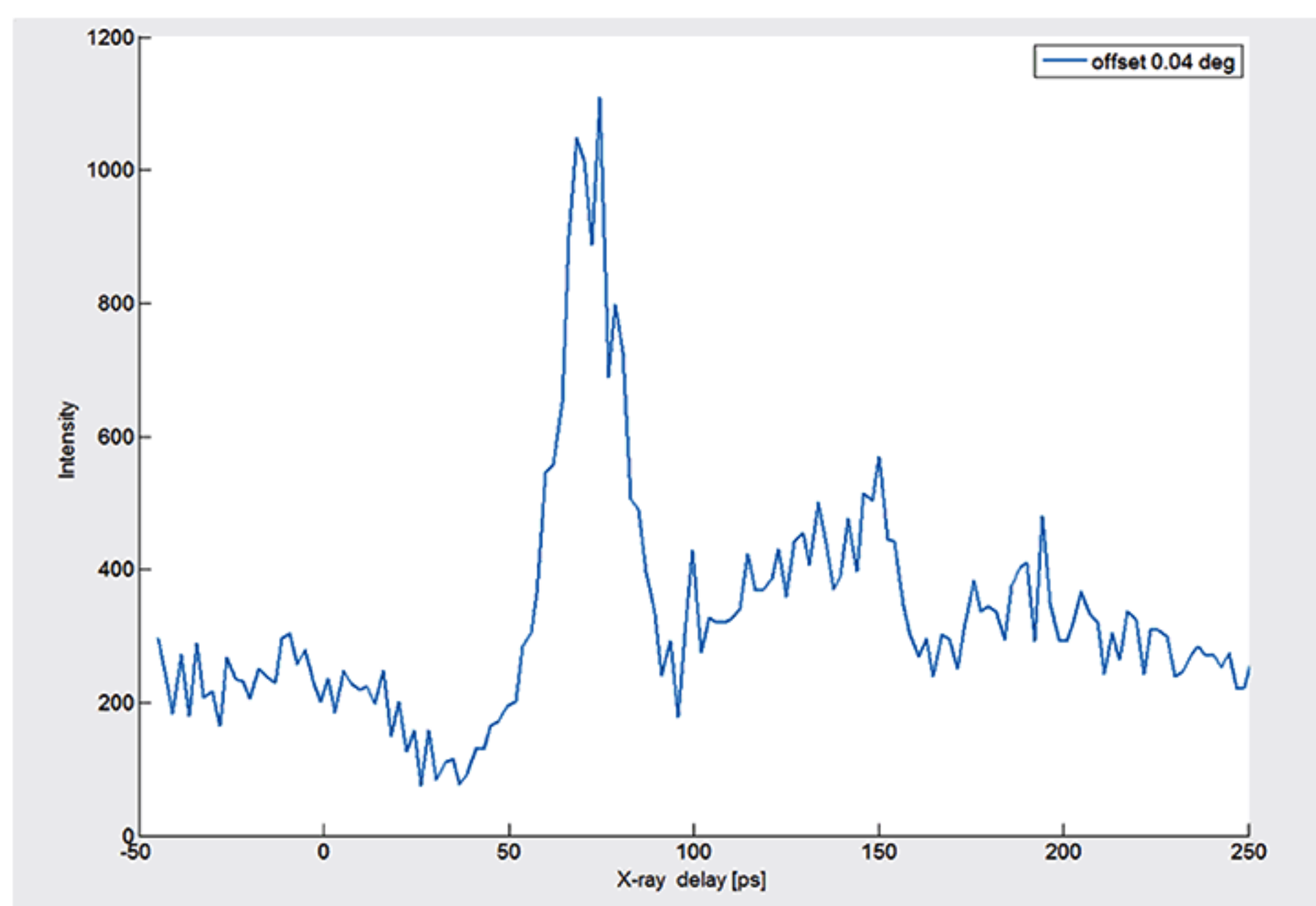


# Facility Update

## Time-resolved measurements

End of March FemtoMAX made the first time-resolved X-ray diffraction measurement. The studied sample was an indium antimonide (InSb) coated with 60 nanometres of gold.

In this particular experiment, the photo-acoustic transducer generated a series of acoustic strain pulses which pairwise made the studied acoustic phonons interfere destructively. Since the experiment probe the acoustic phonon, the X-ray reflectivity shows a peak structure with a 20 picosecond FWHM.



*Time-dependent X-ray intensity when a few scans have been added to improve the signal-to-noise ratio.*

A lot of work remains before FemtoMAX is ready for user experiments. The new in-vacuum undulators will be installed fall 2017 and are anticipated to give more than a factor 100 higher flux at this photon energy (5 keV) compared to the present undulator. The performance will also be enhanced by increasing the repetition rate of the electron pulses in the linear accelerator from 2 Hz to 10 Hz and eventually 100 Hz.

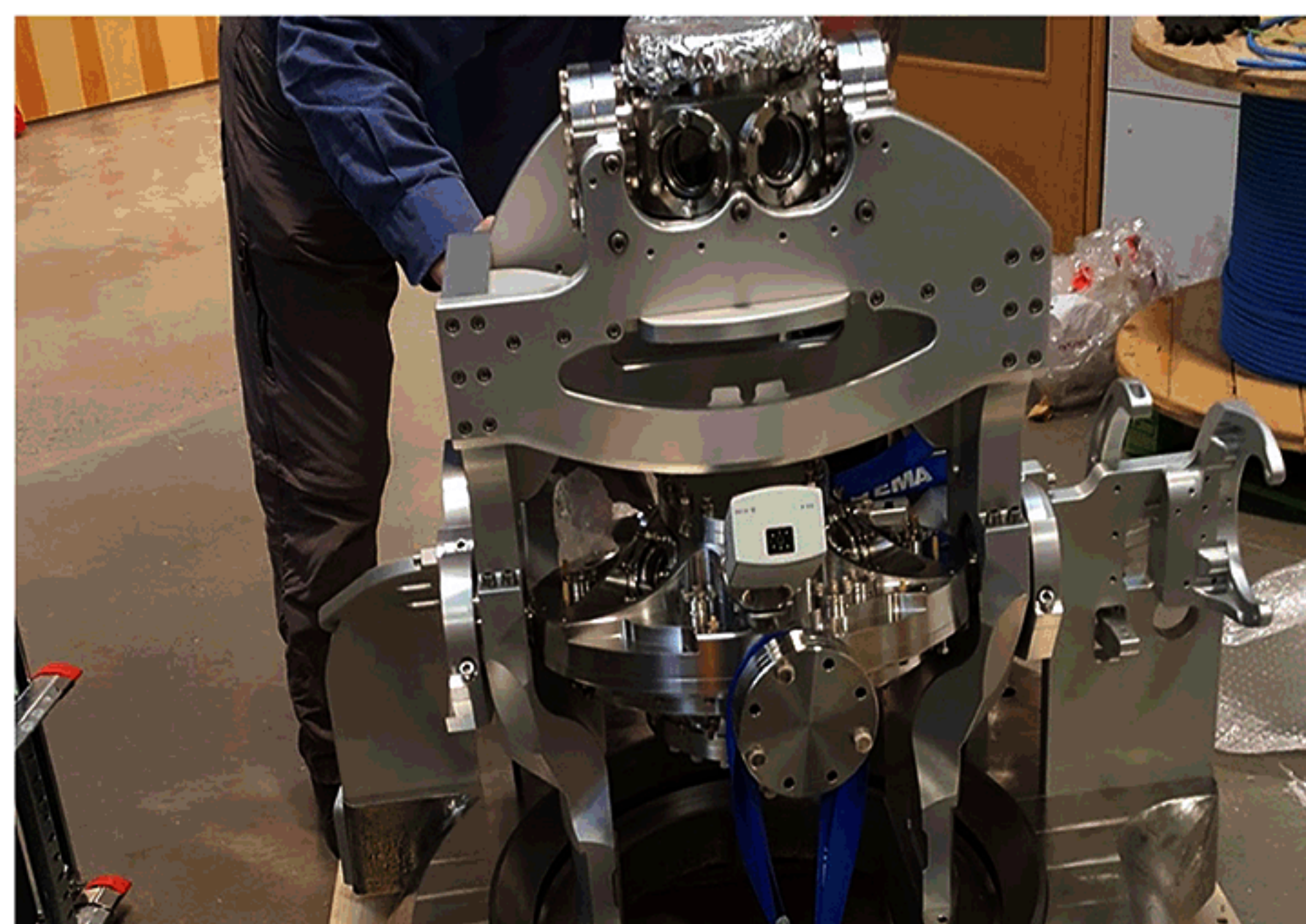
In order to demonstrate that even faster dynamics can be studied, the pulse duration and jitter needs to be measured and optimized. This work is joint with the LINAC team. In order to accommodate higher repetition rates, the data acquisition and storage speed needs to be increased. In the spring, work will be done with pulse-duration measurements and tests aimed at demonstrating flexibility in laser wavelength for the excitation.



## Veritas takes first light

Veritas is a beamline designed to fully exploit the extraordinary brilliance of the 3 GeV ring at MAX IV with the aim to further refine the RIXS method. It comprises a grating spectrometer, which covers the 275–1500 eV energy range. To achieve high energy resolution the instrument is of a total length of 10 m, to achieve high momentum transfer resolution it can rotate continuously 120 degrees in the horizontal plane while maintaining vacuum. The experimental station is designed for a high degree of versatility with sample environments ranging from UHV to liquid jet depending on how the station is set up. This way we are hoping to attract a wide range of user communities

Veritas saw light for the first time in late March, it currently has light all the way to the refocusing optics. Commissioning of beamline, insertion device and end station will continue during spring. Build-up of the RIXS instrument will run in parallel, and is expected to be done late 2017. We hope to welcome the first RIXS users early 2018.



*The heart of Veritas experimental setup, Q-chamber et al, delivered from Uppsala University mid-April.*

For updates on the development of MAX IV, please visit our website [www.maxiv.se](http://www.maxiv.se)

