

**MS16-1-7 FemtoMAX – a beamline for ultrafast pump/X-ray probe experiments**

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**Abstract**

The FemtoMAX beamline[1] is designed for ultrafast pump/X-ray probe experiments with 200 fs time resolution. The beamline is now open for regular user calls. FemtoMAX is driven by the linear accelerator at MAX IV. We will show some of the experiments performed at the FemtoMAX beamline to give a flavour of the experiments that can be performed at the beamline.

Since the end of 2020 the FemtoMAX beamline is operating at a repetition rate of 10 Hz. The X-ray spot size diameter at the sample position has been measured to be 50  $\mu\text{m}$  (FWHM). The two in-vacuum undulators provides X-ray photon energies between 1.8-12 keV and based on the selected energy the number of photons per pulse is  $\sim 10^6$ - $10^7$ , using a multilayer monochromator with 1% bandwidth. An ultrafast laser system delivers ultrashort pump pulses to the sample end station spanning from UV to THz frequencies. The relative timing of the laser and X-ray pulses are measured with an accuracy of  $< 150$  fs using post sorting.

We will show various experiments performed at the FemtoMAX beamline that includes ultrafast studies.

**References**

[1] H. Enquist, A. Jurgilaitis, A. Jarnac, A. U. J. Bengtsson, M. Burza, F. Curbis, C. Disch, J. C. Ekstrom, M. Harb, L. Isaksson, M. Kotur, D. Kroon, F. Lindau, E. Mansten, J. Nygaard, A. I. H. Persson, V. T. Pham, M. Rissi, S. Thorin, C. M. Tu, E. Wallen, X. C. Wang, S. Werin and J. Larsson, *J Synchrotron Radiat* 25, 570-579 (2018).