O-18 **Fri. 20. 06., 9^{40}-10^{00}**

First bending magnet beamline at Solaris

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The first bending magnet beamline built in the National Synchrotron Radiation Centre Solaris is optimized for the soft X-ray photon energy range 200-2000 eV. The calculated energy resolving power (E/ΔE) is of the order of 4000 or higher. The chosen optical design based on plane grating monochromator working in the collimated light has been studied by the Elettra group. The results of the final optical configuration ray-tracing and energy resolution calculations are presented. Additionally, detailed explanation of the purpose of each optical element is reported. The dimensions of the focalized beam at the end station, which will host a Photoemission Electron Microscope (PEEM), are 100μm (H) x 50μm (V). In the future additional refocusing device can be installed to increase the photon flux density on the sample for more demanding experiments. The actual time schedule and final design for the beamline component will be presented and discussed.

Within the framework between Jagiellonian University and Jerzy Haber Institute of Catalysis and Surface Chemistry PAS, the Photoemission Electron Microscope will be main end station of the first beamline. The PEEM was successfully tested at the Pollux beamline in the Swiss Light Source. Exchangeable with microscope we foresee to use separate chamber for X-ray absorption spectroscopy measurements. It will be dedicated to experiments in the field of biology, chemistry, catalysis, material science and physics. In the future, the spectroscopy chamber could be adapted to the other techniques like X-ray magnetic circular dichroism or scanning transmission X-ray microscope chamber.

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Single yoke double bend achromat of the MAX IV 1.5 GeV and Solaris storage rings

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The MAX IV and Solaris synchrotron radiation facilities being constructed in Lund, Sweden and in Krakow, Poland respectively benefit from cutting edge integrated magnet technology [1,2]. The rings, 96 m in circumference, are composed of 12 magnet blocks, that function as double bend achromats (DBA) and will permit storing a 1.5 GeV electron beam with 10^{-9} m·rad horisontal emittance [3]. The ring is an outstandingly gainful optimization between size and emittance, which satisfies demanding experimental requirements while saving space and costs.

Each of the 12 DBA units consists of 25 magnetic elements. One of two constituent bending dipoles will provide soft x-ray photons for experimental stations.

The integration of so many magnets into a single yoke structure, where they are aligned with a precision ranging down to 20 μm represents a challenging engineering task for the designers.

The current status of integrated magnets technology implementation in MAX IV 1.5 GeV and Solaris storage rings will be presented.

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[1] E.S. Reich, *Nature* **501** (2013)148-149.

[2] M. Johansson, "*Design of The MAX IV/Solaris 1.5 GeV Storage Ring Magnets*, WEPO016, Proc. IPAC2011, San Sebastian, Spain, pp. 2430 – 2432

[3] M.R. Bartosik et al.,"Solaris—National Synchrotron Radiation Centre, project progress, May2012", *Radiat. Phys. Chem.* **93** (2013) 4-8.