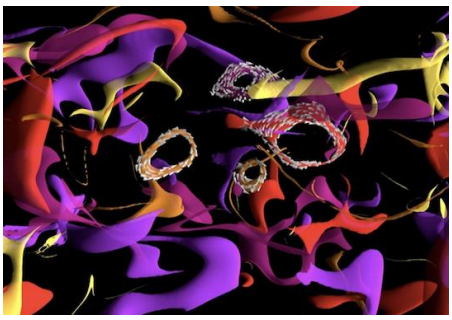
PAUL SCHERRER INSTITUT

PSI facilities newsletter

https://www.psi.ch/science/facility-newsletter

Experimental observation of vortex rings in a bulk magnet



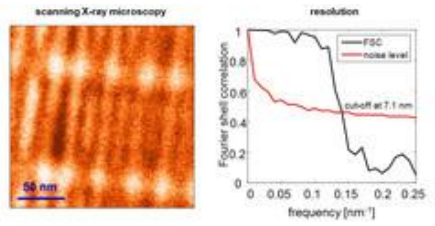
Magnets often harbour intricate magnetization textures, some of which are at the heart of modern technologies such as hard disk drives. Now, an international team of scientists report the discovery of unexpected magnetic structures inside a $GdCo_2$ micropillar. In ptychography experiments at SLS, they observed sub-micrometre loop-shaped configurations, which they identified as magnetic vortex rings. The existence of such structures had been predicted theoretically, but as transient phenomenon. In the experiments now reported, however, the vortex rings turned out to be surprisingly stable. Far beyond their aesthetic appeal, these textures might point the way to further complex three-dimensional structures arising in the bulk of magnets, and could one day form the basis for novel technological applications, for instance energy-efficient 3D data storage and processing.

Read the full story: https://www.psi.ch/en/microspec/scientific-highlights/magnetic-vortices-come-full-circle

Claire Donnelly, et al., Nature Physics, 30 November 2020 (online), DOI: 10.1038/s41567-020-01057-3

Claire Donnelly, et al., Nature **547**, 328–331 (2017), DOI: 10.1038/nature23006

World Record: 7 nm Resolution in Scanning Soft X-ray Microscopy



During the past decade, scientists have put high effort to achieve sub-10 nm resolution in X-ray microscopy. Recent developments in high-resolution lithography-based diffractive optics, combined with the extreme stability and precision of the PolLux and HERMES scanning X-ray microscopes, resulted now in a so far unreached resolution of seven nanometers in scanning soft X-ray microscopy. Utilizing this highly precise microscopy technique with the X-ray magnetic circular dichroism effect, dimensionality effects in an ensemble of interacting magnetic nanoparticles can be revealed.

Read the full story: https://www.psi.ch/en/lmn/scientific-highlights/world-record-with-7-nm-resolution-in-scanning-soft-x-ray-microscopy

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CALIPSOPLUS Access for SMEs

The current call is open from September 01, 2020 – June 30, 2021

CALIPSOplus, a European Horizon2020 funded research and innovation program, provides access support for SMEs to light sources. The access is based on a specific review system for SMEs in parallel to the established academic access route but following the same principles. The proposal confidentiality is kept during the whole process. If the proposal is accepted, the SME will have access to the requested light sources and the experiments will be financially supported through CALIPSOplus.

Get more information: http://www.wayforlight.eu/en/industries/sme-access-proposal/.

For industry use, SLS and SwissFEL offer direct access through the proprietary route, as well.

Read more: https://synchrotron-analysis.ch/.