

Seminario organizada por el
“Grupo de Holografía y Procesado Óptico”



Jueves 10 de octubre de 2013, de 13:00 a 14:00 h

Neutron optics using holographic gratings

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Lugar: **Aula P6/0002 del Taller de Imagen** (situado detrás del Edificio Politécnica II)

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All neutron-optical phenomena are governed by the neutron-optical potential or, equivalently the neutron refractive-index. Thus, an important task in the design of neutron-optical elements is patterning the neutron refractive-index of materials in an efficient way. For this purpose we employ materials that are sensitive to light combined with holographic techniques to produce holographic diffraction gratings for neutron-optics.

We will discuss recent neutron-optic experiments with holographic gratings in which we have demonstrated that two- and three-port beam-splitters as well as free-standing film mirrors for cold and very-cold neutrons are feasible by exploiting the Pendellösung interference effect known in dynamical diffraction theory. Another intriguing possibility is offered by holographic gratings containing superparamagnetic nanoparticles to produce business card-size neutron polarizers working in comparably low external magnetic induction, devices which are being developed at present. Finally we will give an outlook on novel neutron-scattering instrumentation and techniques which are expected from those advancements.

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