



TRR 80 Sonderseminar

Am Freitag, den 26. Januar um 10:00 Uhr

spricht

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über das Thema

Exotic magnetoelectric excitations of the multiferroic $\text{SmFe}_3(\text{BO}_3)_4$

Magnetoelectric (ME) multiferroics (MFs), i.e. materials simultaneously hosting ferroelectric and magnetic order, have been attracting enormous interest due to their potential in information-technology applications.^{I,II} Rare-earth ferrobates are a particularly interesting family of MF crystals, where the strong spin-orbit interaction at the rare-earth sites results in the coupling of the magnetic and electric degrees of freedom. The ME response of the material is enhanced by the antiferromagnetic ordering of the iron spins.^{III}

The same ME coupling appears in the optical regime as different absorption of counter-propagating light beams, where transparent and dark directions can be swapped by reversing the magnetic field.^{IV} Furthermore, due to the ME coupling the strength of absorption at spin-wave resonance frequencies can also be tuned by electric field, opening the path for practical applications.^V

^I L. W. Martin, Y.-H. Chuc and R. Ramesh, Mater. Sci. Eng. R 68, 89 (2010)

^{II} S. M. Wu, Shane A. Cybart, D. Yi, James M. Parker, R. Ramesh and R. C. Dynes, Phys. Rev. Lett. 110, 067202 (2013)

^{III} A. M. Kadomtseva, Yu. F. Popov, G. P. Vorob'ev, A. P. Pyatakov, S. S. Krotov, K. I. Kamilov, V. Yu. Ivanov, A. A. Mukhin, A. K. Zvezdin, A. M. Kuz'menko, L. N. Bezmaternykh, I. A. Gudim and V. L. Temerov, Low Temp. Phys., 36 511–521 (2010)

^{IV} I. Kézsmárki, D. Szaller, S. Bordács, V. Kocsis, Y. Tokunaga, Y. Taguchi, H. Murakawa, Y. Tokura, H. Engelkamp, T. Rößm and U. Nagel, Nat. Commun. 5, 3203 (2014)

^V A. M. Kuz'menko, D. Szaller, Th. Kain, V. Dziom, L. Weymann, A. Shuvaev, Anna Pimenov, A. A. Mukhin, V. Yu. Ivanov, I. A. Gudim, L. N. Bezmaternykh and A. Pimenov, Phys. Rev. Lett. 120, 027203 (2018)

Gäste sind herzlich willkommen.

Der Vortrag findet im Seminarraum S-403, Institut für Physik,
Universität Augsburg statt.

Gastgeber: Prof. Dr. István Kézsmárki
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