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**Competing magnetic and superconducting order and the role of vortices in iron-based superconductors** B. MENCIA URANGA, Niels Bohr Institute, University of Copenhagen, DK-2100 Copenhagen, Denmark, J. LARSEN, Department of Physics, Technical University of Denmark, 2800 Kgs. Lyngby, Denmark, G. STIEBER, S.L. HOLM, K. LEFMANN, Niels Bohr Institute, University of Copenhagen, DK-2100 Copenhagen, Denmark, C. NIEDERMAYER, Laboratory for Neutron Scattering and Imaging, Paul Scherrer Institute, CH-5232 Villigen, Switzerland, T. WOLF, Karlsruher Institut fuer Technologie, Institut fuer Festkoerperphysik, D-76021 Karlsruhe, Germany, B.M. ANDERSEN, Niels Bohr Institute, University of Copenhagen, DK-2100 Copenhagen, Denmark — We discuss recent neutron and muSR measurements of the magnetic and superconducting (SC) properties of Co-doped Ba-122 as a function of temperature and external magnetic field [1]. Below the $T_c$, the magnetic and SC order parameters coexist and compete. A magnetic field can significantly enhance the magnetic scattering in the SC state [1]. We perform a microscopic modeling of the data by use of a five-band Hamiltonian relevant to iron pnictides. In the SC state, vortices can slow down and freeze spin fluctuations locally. When such regions couple they result in a long-range ordered antiferromagnetic phase producing the enhanced magnetic elastic scattering in agreement with experiments [1]. Lastly, we also study the low energy bound states in the vortex core of LiFeAs, where the quasiparticle states in the vortex core can provide useful information about the gap structure [2].

[1] J. Larsen, G. Stieber, S. L. Holm, K. Lefmann, C. Niedermayer, T. Wolf, preprint 2014
[2] B. Mencia Uranga, B. M. Andersen, preprint 2014

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