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**In plane vortex lattice of the heavy Fermion superconductor CeCoIn5** A.D. BIANCHI, Université de Montréal, P. DAS, University of Notre Dame, J.S. WHITE, Paul Scherrer Institut, A.T. HOLMES, E.M. FORGAN, University of Birmingham, M. KENZELMANN, M. ZOLLIKER, S. GERBER, J.L. GAVILANO, Paul Scherrer Institut, E.D. BAUER, J.L. SARRAO, Los Alamos National Laboratory, C. PETROVIC, Brookhaven National Laboratory, M.R. ESKILDSEN, University of Notre Dame — We present a small angle neutron scattering study of the vortex lattice (VL) in the unconventional superconductor $CeCoIn_5$ for magnetic fields $H$ applied in the crystallographic $ab$-plane. $CeCoIn_5$ is a $d_{x^2-y^2}$ superconductor with the lines nodes of the superconducting gap oriented along the [110] direction. At low fields $H$ applied parallel to [100], and [110], we observed a distorted hexagonal VL with an opening angle of about 80°. However, for [110] we find a reorientation transition for fields above 9 T where the vortex lattice is rotated by 90°. The $H$-dependence of the form factor of the vortex lattice is similar to what we observed previously along the $c$-axis: The scattering intensity increases with increasing $H$ due to Pauli paramagnetism. For fields where the transition into the SC state becomes first order, we observe a broadening of the VL.

[X] Prefer Oral Session
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Andrea Bianchi
andreadanielebianchi@googlemail.com
Université de Montréal

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