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Coexistence of Superconducting and Magnetic Order in $CeCoIn_5$ GEORGIOS KOUTROULAKIS, VESNA MITROVIC, Brown University, MLADEN HORVATIC, CLAUDE BERTHIER, GHMFL, Grenoble, France, GERARD LAPERTOT, JACQUES FLOUQUET, CEA, Grenoble, France — The interplay between magnetic and superconducting order near a quantum critical point in heavy fermion materials has attracted intensive research interest in recent years. One of the most intriguing examples is that of $CeCoIn_5$, in which a novel phase within the superconducting phase is observed near the critical field at low temperature. Recent nuclear magnetic resonance [1] and neutron scattering [2] experiments showed that a static magnetic order is stabilized in this phase. The microscopic nature of this magnetic state will be discussed.

[1] B.-L. Young *et al.*, Phys. Rev. Lett. **98**, 036402 (2007).
[2] M. Kenzelmann *et al.*, Science **321**, 1652(2008).

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