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Towards a solution for the puzzle of the high-field, low-temperature phase in $CeCoIn_5$: An NMR investigation GEORGIOS KOUTROULAKIS, Brown University, MICHAEL D. STEWART JR., Brown University, NIST, VESNA F. MITROVIC, Brown University, MLADEN HORVATIC, CLAUDE BERTHIER, GHMFL, GERARD LAPERTOT, JACQUES FLOUQUET, SPSMS, CEA — The unravelling of long range magnetic order within the superconducting phase of $CeCoIn_5$, limited in a narrow region of the phase diagram near H_{c_2}, has opened a new window for the understanding of the interplay between magnetic and superconducting orders. Nevertheless, essential questions regarding the exact nature of the magnetic structure and the superconducting order parameter, as well as the driving mechanisms of their coexistence, remain unanswered. In this talk, we attempt to shed some light on these puzzles by analyzing the results of our detailed high-field, low-temperature Nuclear Magnetic Resonance study.

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