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Skyrmion Flux Lattices and their μSR signature[1] QI LI, JOHN TONER, DIETRICH BELITZ, University of Oregon — Recently, topological excitations known as skyrmions were predicted to exist in p-wave superconductors [1]. The elastic theory of an induced skyrmion lattice was developed in [2], and its melting curve was found to be qualitatively different from that for vortex lattices. Here we show that the muon spin resonance (μSR) signatures of the two types of lattices are also very different. μSR has been applied extensively to study the magnetic properties of vortex flux lattices [3]. The observable in this technique is the μSR line shape $n(B)$, which is the probability density that a muon experiences a local magnetic induction B. In a vortex lattice, for small B, $n(B) \propto \ln(1/B)/B$. By contrast, for a skyrmion lattice we predict $n(B) \propto B^{(} - 3/2)$. This difference provides another way to easily distinguish between vortex and skyrmion flux lattices, and can thus help to identify p-wave superconductors. [1] A. Knigavko, B. Rosenstein, and Y.F. Chen, Phys. Rev. B 60, 550 (1999). [2] Qi Li, John Toner, and D. Belitz, Phys.Rev. Lett. 98, 187002 (2007). [3] J. E. Sonier, J.H. Brewer, and R. F. Kiefl, Rev. Mod. Phys. 72, 769 (2000).

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