Skyrmion Flux Lattices and their \( \mu \text{SR} \) 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 (\( \mu \text{SR} \)) signatures of the two types of lattices are also very different. \( \mu \text{SR} \) has been applied extensively to study the magnetic properties of vortex flux lattices [3]. The observable in this technique is the \( \mu \text{SR} \) 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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