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Ferromagnet/Superconductor Systems: Effects of Magnetic Domain Structure CHARLES MOREAU, Albion College, REZA LOLOEE, WILLIAM PRATT, NORMAN BIRGE, Michigan State University — Ferromagnet/Superconductor (F/S) hybrid systems have received considerable interest owing to the interplay between their competing types of order. A number of open questions remain about these systems. In particular, several groups have observed "superconducting spin switch" behavior in F/S/F trilayers, occasionally with conflicting results [1,2]. There is concern that the magnetic domain structure may be playing an important role in some experiments. To address this issue, we have measured the resistance R of S/F bilayers as a function of magnetic field H in the vicinity of their superconducting transitions. One expects either dips (enhancement of superconductivity) or peaks (diminishment of superconductivity) in $R(H)$ at the coercive field of the F layer. The latter is due to stray fields from F in S, whereas the former is due to averaging of the exchange field over the superconducting coherence length [3]. Our preliminary data on Nb/Ni films indicate only peaks in $R(H)$ when the Ni magnetization switches, indicating that the stray magnetic field is the dominant of the two effects in this material system. [1] I. Moraru *et al.,* Phys. Rev. B **74**, 220507(R) (2006). [2] A. Yu. Rusanov *et al.,* Phys. Rev. B **73**, 060505(R) (2006). [3] A. Yu. Rusanov *et al.*, Phys. Rev. Lett. **93**, 057002 (2004). Work Supported by DOE Award ER46341

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