Dependence of the Superconducting Transition Temperature on Magnetization Orientation in an F/S/F Heterostructure\textsuperscript{1} ION MORARU, NORMAN BIRGE, Michigan State University — It is known that placing a ferromagnet (F) in contact with a thin superconductor (S) suppresses the superconducting transition temperature of the latter due to the proximity effect. It has been proposed [1,2] that in an F/S/F structure, different mutual orientation of the magnetizations of the outer ferromagnets will produce different critical temperatures. Specifically, a slightly lower Tc should result for the parallel configuration than for the anti-parallel case. This has been shown experimentally [3] using a CuNi/Nb/CuNi exchange-biased spin valve, where a difference of a few mK was observed. While dilute magnetic alloys are believed to be less destructive to superconductivity, we show that comparable results can be achieved using a pure elemental ferromagnet, in a Ni/Nb/Ni spin valve. [1] L. R. Tagirov, Phys. Rev. Lett. 83, 2058 (1999). [2] A. I. Buzdin et al., Europhys. Lett. 48, 686 (1999). [3] J.Y.Gu et al, Phys. Rev. Lett. 89, 267001 (2002).

\textsuperscript{1}Supported by NSF DMR 9809688 and 0405238

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Date submitted: 17 Dec 2004

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