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Angular Dependence of the Superconducting Transition Temperature in Ferromagnet-Superconductor-Ferromagnet Trilayers JIAN ZHU, ILYA KRIVOROTOV, University of California, Irvine, KRIVOROTOV GROUP TEAM — The superconducting transition temperature, T_c, of a ferromagnet (F) – superconductor (S) – ferromagnet trilayer depends on the mutual orientation of the magnetic moments of the F layers. This effect has been previously observed in F/S/F systems as T_c difference between parallel and antiparallel configurations of the F layers [1]. Here we report measurements of the angular dependence of T_c in CuNi/Nb/CuNi trilayers. In our measurements, magnetization of one F layer is fixed by exchange bias while magnetization of the other F layer is rotated in the plane of the trilayer through 360 degrees, and T_c is measured as a function of the angle between the F layer magnetizations. The observed angular dependence of T_c depends on the thickness of the CuNi layers and it shows significant deviations from a simple cosine function for thin CuNi layers. The observed angular dependence is qualitatively similar to theoretical predictions taking into account odd triplet pairing in the non-collinear F/S/F geometry [2].

[1] J. Y. Gu, C.-Y. You, J. S. Jiang, J. Pearson, Ya. B. Bazaliy, and S. D. Bader, *Phys. Rev. Lett.* 89, 267001 (2002)
[2] Ya. V. Fominov, A. A. Golubov, and M. Yu. Kupriyanov, *JETP Letters, Vol. 77, No. 9, 2003, pp. 510–515.*

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