Abstract Submitted
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Optimization of Phase-Controllable Ferromagnetic Josephson Junctions for Cryogenic Memory Applications[1] BETHANY M. NIEDZIELSKI, JOSEPH A. GLICK, JOSHUA WILLARD, REZA LOLOEE, W. P. PRATT JR, NORMAN O. BIRGE, Michigan State University — Josephson junctions containing ferromagnetic layers are currently of interest for use in cryogenic memory. Last year, we successfully demonstrated that the phase of such a junction could be switched between 0 and π by changing the magnetization direction of the two magnetic layers in the junction from the antiparallel to parallel configuration [1]. This shows great promise for superconducting memory, but to be used in applications, these phase-controllable junctions must have adequate critical current, low switching fields, moderate initialization fields, and a high degree of reproducibility. To address these concerns, we have carried out experiments to optimize the performance of the base superconducting electrode, normal metal spacer layers, and magnetic layers. We will report the results of these improvements as applied to our devices. [1] E. C. Gingrich, B. M. Niedzielski, J. A. Glick, Y. Wang, D. L. Miller, R. Loloee. W. P. Pratt Jr., and N. O. Birge, Nature Phys. **12,** 564–567 (2016).

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