

Abstract Submitted  
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**TMR study of GaMnAs/AlGaAs:Be/GaMnAs trilayers**<sup>1</sup> JOSEPH HAGMANN, XINYU LIU, MALGORZATA DOBROWOLSKA, JACEK FURDYNA, Department of Physics, University of Notre Dame, Notre Dame, IN 46556, USA, TAEHEE YOO, SUNGWON KHYM, SANGHOON LEE, Department of Physics, Korea University, Seoul 136713, South Korea — GaMnAs/GaAs:Be/GaMnAs trilayers have recently demonstrated antiferromagnetic (AFM) coupling between the two ferromagnetic (FM) layers, mediated by holes in the spacer layer. In this work, GaMnAs/Al<sub>x</sub>Ga<sub>1-x</sub>:Be/GaMnAs trilayer samples with varying Al concentrations were fabricated into magnetic tunnel junction (MTJ) devices with range of pillar diameters to measure tunneling magnetoresistance (TMR) under various conditions. SQUID measurements were used to measure the magnetization of the samples, including switching fields for parallel and antiparallel magnetization alignments of the FM layers. TMR was observed in the sample with Al<sub>0.22</sub>Ga<sub>0.78</sub>As:Be spacer, but was massively suppressed in the samples with lower Al content. The presence of holes in the spacer layer is shown to suppress TMR. This illustrates the difference in conditions for TMR and for AFM interlayer coupling.

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