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Andreev Reflection Studies in GaMnAs/Nb Micro-Structures HUSSEIN ABUJEIB, DIANA DAHLIAH, JUSTIN GUENTHER, KHALID EID, Miami Univ, XINYU LIU, JACEK FURDYNA, University of Notre Dame, MIAMI UNIVERSITY COLLABORATION, UNIVERSITY OF NOTRE DAME COLLABORATION — The ability to measure the electron spin polarization of ferromagnetic materials at the interface with non-ferromagnetic materials is essential for spintronics applications. The spin polarization at ferromagnetic/non-ferromagnetic interfaces can be very different from the bulk spin polarization due to the surface states. Andreev spectroscopy has the ability of estimating the spin polarization for ferromagnetic materials. We use the Circular Transfer Line Method (CTLM) [1-2] to measure the Andreev reflection effect at GaMnAs/superconductor interface and to extract GaMnAs spin polarization. This technique works well for high-resistivity films and has other advantages over point contact and planar Andreev effect measurement geometries. We will present our recent results and contrast them with previous work, where we easily eliminate the bulk resistance contribution and the broadening of the superconducting gap. Furthermore, we found that a Schottky barrier is likely to form at the interface unless the interface is cleaned carefully and a high quality sample is used. This Schottky barrier can be confused as an actual Andreev effect.

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