

Abstract Submitted  
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**Characterizations for a Mirror Neutron Search**<sup>1</sup> TAYLOR DENNIS, East Tennessee State University, NN' COLLABORATION — To date, there has been no conclusive evidence as to what kinds of particles make up dark matter. The nn' Collaboration has developed an experiment at the Spallation Neutron Source (SNS) to search for a possible dark matter candidate, mirror matter, by using a cold neutron beam. Using strong magnetic fields with high gradients, through a hypothetical transition magnetic moment, it is possible that a neutron may oscillate into its mirror neutron counterpart. After initial production, any mirror (sterile) neutrons will pass through a strong neutron absorber and then into another strong magnetic field where some may oscillate back and be detectable. Thus, the regeneration of neutrons from the mirror state, if the process exists in nature, can be discovered. I will present neutron beam characterizations, background analyses, and implications for statistical sensitivity limits for this beyond Standard Model search.

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