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**Scaling Relationships between the Primordial NFW and Presently Observed Dark Matter Halos of Milky Way Dwarf Galaxies**  
BRIAN BARRY, CASEY WATSON, Millikin University — By comparing the primordial, cuspy NFW halos of dwarf galaxies found in simulations to the observed density profiles of several Milky Way dwarf galaxies, we are able to quantify the severity of the well-known core-cusp problem on a galaxy-by-galaxy basis. We establish scaling relationships between the cusp mass and the observed core radius and core density of the best-fit Burkert profiles for these dwarf galaxies, and show that dark matter annihilation cannot remove the excess cusp mass without violating current constraints on the dark matter annihilation cross section.

Brian Barry  
Millikin University

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