

Indirect Detection Constraints on the Model Space of Dark Matter Theories



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Using limits on photon flux from dwarf spheroidal galaxies, I place bounds on the parameter space of models in which dark matter annihilates into multiple final state particle pair channels. I derive constraints on effective operator models and simplified models with dark matter couplings to third generation fermions and to pairs of standard model vector bosons. I present limits in various slices of model parameter space along with estimations of the region of maximal validity of the effective operator approach for indirect detection. I visualize bounds for models with multiple final state annihilations by projecting parameter space constraints onto triangles, a technique familiar from collider physics; and compare our bounds to collider limits on equivalent models.

Tuesday

September 13

4:00 P.M.

Rm 415 NSH