Notre Dame Science
Department of Physics

CONSTRAINING DARK MATTER

Particle Physics Seminar

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Tuesday, January 24, 2012
4:00 P.M. NSH 415

Astrophysical and cosmological observations provide compelling evidence for the existence of dark matter in the universe, but its particle physics nature remains mysterious. In this talk, I will discuss how hardron colliders and neutron stars can help us understand dark matter properties. Using an effective field theory approach, we show that mono-jet+missing energy searches at the Tevatron and LHC can provide a probe of dark matter, which is complementary to direct detection experiments, and in some cases the colliders provide an even stronger constraint. Stellar systems are natural laboratories for exploring dark matter. We show dark matter particles accumulated in old neutron stars can form mini black holes and lead to the destruction of host stars. The observation of old neutron stars actually excludes a class of dark matter models.

All interested persons are cordially invited to attend.