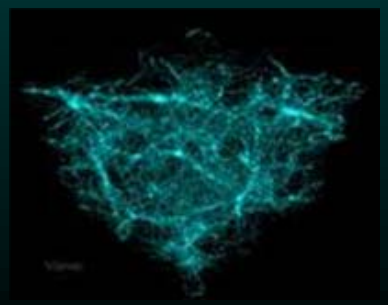
CU Physics Department Particle Seminar

Wednesday, October 31, 2007 705 Pupin Hall 1:00 PM

"Searching for the Dark Matter Wind: A Novel Approach to Dark Matter Detection

The motion of the sun, and therefore our solar system, around the galactic center should produce an apparent 'dark matter wind.' This wind is detectable as modulations of the magnitude and direction of a dark matter interaction signal in a terrestrial detector. Thus, directional detection of dark matter can provide an unambiguous observation of dark matter interactions even in the presence of backgrounds. The DM-TPC collaboration is developing a detector with the goal of measuring the direction and sense ("head-tail") of nuclear recoils produced in dark matter interactions. A small prototype detector is operating at MIT in a neutron beam. First results demonstrate the suitability of this approach to measure directionality, and we have recently submitted for publication the first observation of the "head-tail" effect for low-energy neutrons.



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