Abstract Submitted
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DMTPC: a direction-sensitive dark matter search JAMES BATTAT, MIT, STEVE AHLEN, BU, THOMAS CALDWELL, UPenn, DENIS DUJMIC, MIT, ANDREI DUSHKIN, Brandeis, PETER FISHER, SHAWN HENDERSON, MIT, ANDREW INGLIS, BU, ASHER KABOTH, G. KOHSE, RICHARD LANZA, JEREMY LOPEZ, JOCELYN MONROE, GABRIELLA SCIOLLA, MIT, B.N. SKVORODNEV, Brandeis, HIDEFUMI TOMITA, BU, ROLAND VANDERSPEK, MIT, HERMANN WELLENSTEIN, Brandeis, RICHARD YAMAMOTO[1], MIT, DMTPC COLLABORATION — A WIMP detector with directional sensitivity could correlate signal events with astrophysical sources, thereby providing a definitive observable signature of dark matter. Our Dark Matter Time-Projection Chamber (DMTPC) collaboration uses a gas-based detector with optical and charge readout to achieve directional sensitivity. We have built a 10 liter prototype detector and operated it in a surface laboratory. The detector consists of two back-to-back time-projection chambers enclosed within a vacuum vessel which is filled with CF_4 gas at 75 Torr. I will report on the results from this run, including the first DMTPC limit on the spin-dependent cross section. In addition, I will describe our next-generation detector which we will deploy underground at the WIPP facility in New Mexico (1.6 km water equivalent depth).

[1]Deceased

James Battat
MIT

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