



The University of Western Ontario
DEPARTMENT OF PHYSICS AND ASTRONOMY

2018 Canadian Association of Physicists (CAP) LECTURE TOUR

Date: THURSDAY, 22nd March 2018

Time: 3:30 p.m.

Location: Physics & Astronomy Classroom 10

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Dark Matter: How to hunt for the unknown

ABSTRACT

The quest for understanding the dark matter which pervades our universe has been proceeding for many years and is approaching a momentous time. The existence of this elusive matter is now widely accepted, and considerable experimental effort is directed at deducing its fundamental properties. This talk will focus on results and prospects from two experiments using complementary search techniques. The first is the PICO experiment, a superheated liquid detector at SNOLAB which recently published world-leading results. The second is the IceCube/DeepCore experiment situated in the deep ice at the South Pole and using neutrinos to look for the annihilation signal. Along with the future of these experiments, the imminent challenges to all direct detection experiments will also be discussed.

Short Bio:

Ken Clark did his PhD work on the PICASSO dark matter search experiment at Queen's University. He continued to a postdoctoral position at Case Western Reserve University working on the CDMS and LUX projects. This was followed by a diversion into neutrino physics with a UK-centred position located primarily at Oxford University and a return to North America to Pennsylvania State to work on the IceCube experiment. A return to Canada with a position at the University of Toronto provided the opportunity to come back to the dark matter field with PICO, and this involvement continued at SNOLAB. Most recently Ken has accepted a position with CPARC at Queen's University to continue this work.