



Broadening the Searchlight: New Ideas in Dark Matter Detection.

Tuesday, 6 November 2018, DESY Auditorium, 16:45 h

Kathryn Zurek (LBNL/CERN)

Searches for massive dark matter have largely focused on a mass window near the weak scale, the so-called “WIMP window”. This window is, however, becoming increasingly closed by both the LHC and the unprecedented sensitivity of direct detection experiments. At the same time, theoretical work in recent years has shown lighter dark matter candidates in a hidden sector are theoretically well-motivated, natural and arise generically in many theories beyond the standard model. New ideas are needed to search for dark matter with mass below a GeV and as light as the warm dark matter limit of a keV. We propose new ideas to search for such light dark matter with superconductors, Dirac materials, superfluid helium, and polar crystals. We show that these same experiments, through inelastic processes, may also be sensitive to dark matter with masses in the meV to keV mass window, broadening the mass reach to light dark matter by many orders of magnitude.



- **Coffee, tea and cookies will be served at 16:30h**
- **After the colloquium there is a chance for private discussions with the speaker over drinks and pretzels**