Long range dark matter forces and new views on old problems

Dr. Hooman Davoudiasl
Brookhaven National Laboratory

We entertain the possibility that a long range force may act on dark matter. The potential coupling of this force to, for example, baryons or neutrinos could lead to new ways of thinking about some of the open questions in particle physics. Here, we mainly focus on scalar forces with various coupling strengths and ranges, and examine some of the ways in which they can affect interpretations of dark matter direct detection or neutrino oscillation experiments.