LABORATORY FOR ELEMENTARY-PARTICLE PHYSICS

LEPP Joint Seminar

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Rutgers

Exploring dark sectors at FASER: ForwArd Search ExpeRiment at the LHC

New physics has traditionally been expected in the high-pT region at high-energy collider experiments. If new particles are light and weakly-coupled, however, this focus may be completely misguided, as light particles are produced predominantly in the forward region, typically within a few mrad of the beam line. Such particles are often long-lived, and can propagate through matter without interacting, before decaying. At the high-energies of the LHC, their propagation distances are enhanced, and can be relatively long on LHC scales.

In this talk I will present FASER: the ForwArd Search ExpeRiment at the LHC, an innovative new experimental proposal that is in the final approval stages at CERN. FASER will look for new light weakly-coupled long-lived particles using a small and inexpensive detector that will be placed along the beam collision axis, downstream from CERN's ATLAS detector, and after the beam line has curved. FASER's expected new physics discovery potential covers a swath of currently unconstrained parameter-space, which is comparable to, and complementary to, much larger and more expensive proposed experiments.

In the talk, I will explore the theoretic aspects, review the recent experimental developments, and report on the expected experimental time-line.

Friday, Feb. 1, 2019

1pm

401 Physical Sciences Bldg.