



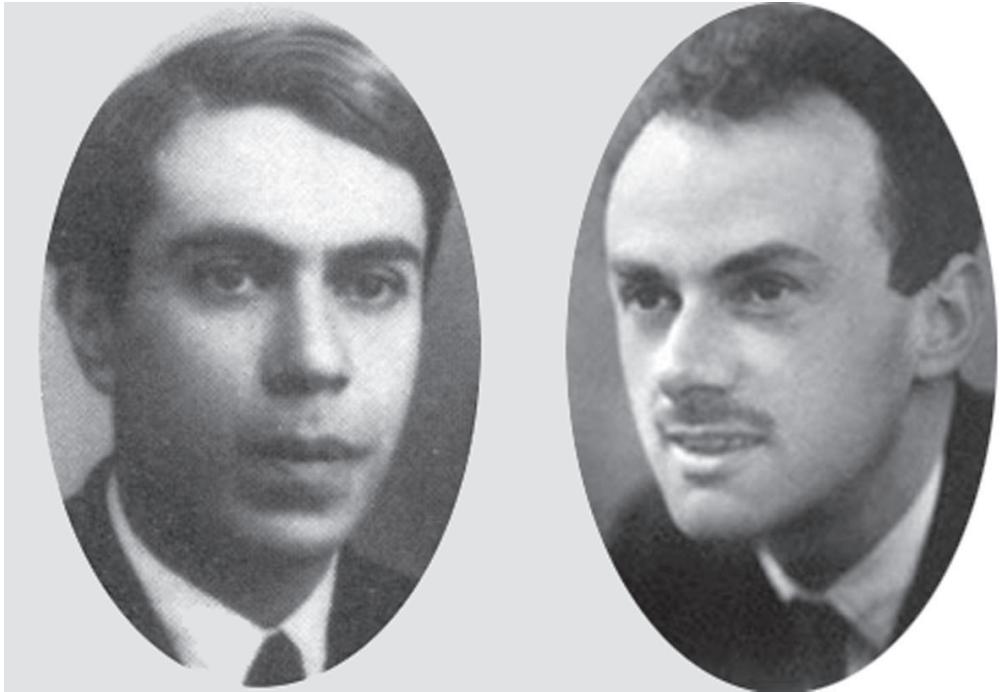
Wright
Laboratory

Ako Jamil

Yale University

October 16, 2018 at 12:00 p.m. in WLC-245

The Search for Majorana Neutrinos with nEXO



The discovery of $0\nu\beta\beta$ has profound implications for the Standard Model, as it would prove the existence of a new type of particle, Majorana fermions, and show that lepton number conservation is violated. Moreover, it provides hints for more beyond the Standard Model physics, possibly allowing for a different mass generation mechanics (other than Higgs) and the introduction of GUT-scale heavy, right-handed neutrinos.

nEXO is a 5 tonne LXe TPC planned to search for the neutrinoless double beta decay of Xe^{136} with a target half-life sensitivity of approximately 10^{28} years, which is achievable through careful material selection, an improved design of the TPC and a multi-dimensional analysis and event reconstruction. MC simulations derive a sensitivity to the effective Majorana neutrino mass between 5.7 and 17.7 meV on a 90% C.L. depending on the nuclear matrix element calculation after 10 years of live time.

Lunch is served outside of WLC-245 starting at 11:45 a.m. RSVP requested.

Sponsored by the Flint Fund, Yale Wright Laboratory, Yale University, and the Yale Physics Department.