

Institut Ruđer Bošković
ZAVOD ZA TEORIJSKU FIZIKU
Bijenička c. 54
ZAGREB, HRVATSKA

SEMINAR ZAVODA ZA TEORIJSKU FIZIKU
(Zajednički seminari Zavoda za teorijsku fiziku,
Zavoda za eksperimentalnu fiziku IRB-a i Fizičkog odsjeka PMF-a)

Origin of neutrino mass and the LHC

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Datum: srijeda, 26. veljače 2014.
Vrijeme : **15:00 sati c.t.**
Mjesto: IRB, dvorana I krila

Abstract:

Masses of most elementary particles appear to have a dynamical origin from spontaneous electroweak symmetry breaking, mechanism which is being probed by measurements of Higgs boson decays. Neutrino mass, in particular its Majorana nature, remains a mystery of particle physics. The associated lepton number violation is probed with low energy nuclear decays, and at high energy colliders, such as the LHC. We discuss possible ways of searching for neutrino mass origin at the LHC in the context of see-saw mechanism(s) and in Left-Right symmetric theory. We analyse the connection between Dirac and Majorana masses and show that an unambiguous relation exists within the minimal Left-Right symmetric model. The phenomenological impact of this connection is demonstrated on processes at the LHC and the electric dipole moment of the electron.

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