

Phenomenology of Seesaw-Motivated Heavy Leptons at the LHC

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We study the phenomenology of Dirac fermion 5-plets leading to the tree-level seesaw different from standard type I and III. They give rise to the seesaw formula $m_{\nu} \sim v^6/M^5$ which reproduces masses for light neutrinos $m_{\nu} \sim 10^{-1}$ eV by $M > \text{TeV}$ new states, testable at the LHC. Their Drell-Yan production rates are enhanced due to the enlarged effective gauge couplings, and their tree-level cascade decays are opened by enlarged mass splittings within a multiplet. Specific decays, including a distinguished triply charged Σ^{+++} into $W^+W^+l^+$ channel with specific decay signature, may be accessible already at present $\sqrt{s} = 7 \text{ TeV}$ and 1fb^{-1} of data.

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