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Searches for new physics with leptons using the ATLAS detector

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Many theories beyond the Standard Model predict new phenomena, such as Z' , W' bosons, or heavy leptons, in final states with isolated, high-pt leptons ($e/\mu/\tau$). Searches for new physics with such signatures, produced either resonantly or non-resonantly, are performed using the ATLAS experiment at the LHC. This includes a novel search that exploits the lepton-charge asymmetry in events with an electron and muon pair. Lepton flavor violation (LFV) is a striking signature of potential beyond the Standard Model physics. The search for LFV with the ATLAS detector focuses on the decay of the Z boson into different flavour leptons ($e/\mu/\tau$). The recent 13 TeV pp results will be reported.

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