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**Sexta 25/09/2020, 11am**

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**Title:**

Evidence for Higgs boson decay to a pair of muons

**Abstract:**

Probing the Higgs boson coupling to the muon is one of the last experimentally accessible frontiers in the direct measurement of Higgs boson couplings at the LHC. This seminar will highlight the first evidence for the rare Higgs boson decay to muons, achieved by the CMS Collaboration using the full dataset collected at 13 TeV during Run-2 of the LHC. This milestone was achieved earlier than expected thanks to the excellent performance of the CMS detector, with high precision tracking and muon reconstruction systems, and also through the development of novel analysis strategies that include intensive use of machine learning techniques. The first set of measurements of the Higgs boson properties through the muon decay channel is also presented, with the observed signal well consistent with the standard model predictions. Finally, prospects for this measurement at the HL-LHC are reported.