Irfu
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Séminaire SPP

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Probing fermion flavour structure with rare and exotic Higgs boson processes

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Understanding the fermion mass hierarchy and mixing pattern is one of the pressing questions of particle physics. The three generations of charged fermions differ only through values of their Yukawa couplings to the Higgs boson ; direct measurements of these couplings will thus probe the flavour structure of the Standard Model. These measurements will advance our understanding of the fermion flavour structure and any discrepancy with theory predictions can lead to new insights into the origin of the fermion mass hierarchy. After the discovery of the Higgs boson, the ATLAS and CMS collaborations have performed extensive studies of its properties, with all measurements so far consistent with values predicted by the Standard Model. These results include searches for Higgs boson decays to a muon pair and for associated production of the Higgs boson with a top quark pair. These processes have not been observed yet, but given sufficient data, they will allow us to measure directly the muon and top quark Yukawa couplings. This presentation will discuss recent ATLAS searches for Higgs boson decays to a muon pair and for associated production of the Higgs boson with a top quark pair, and it will also summarise ATLAS searches for exotic flavour violating Higgs boson processes.

Le café sera servi 10 minutes avant.

NB : La présentation d'une pièce d'identité est exigée à l'entrée du centre. Tous les auditeurs extérieurs sont priés de prévenir à l'avance Martine Oger, tél. 01 69 08 23 50, e-mail : `martine.oger@cea.fr`. (U.E. : délai de 24 h, hors U.E. : délai de 4 jours).