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Flavour violating couplings of the Standard Model scalar boson

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We discuss the possibility that the Standard Model scalar boson H couples to quarks and leptons in a flavour violating manner. Such flavour off-diagonal couplings can arise for instance in Two Higgs Doublet Models, or more generally in any model with more than one source of electroweak symmetry breaking. In the first part of the talk, we summarize constraints from low-energy experiments, in particular from rare decay searches and neutral meson oscillations. In the second part, we discuss LHC searches, focusing in particular on the final state $H \rightarrow \mu\tau$, in which CMS has observed a 2σ fluctuation, on the related decay $H \rightarrow e\tau$, and on couplings of the form Htc and Htu in the quark sector. We propose search strategies for several novel signatures associated with flavour changing H couplings and estimate their sensitivity.

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Classification de Session: The Scalar Sector

Classification de thématique: Theory