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## Exploring two Higgs doublet models through Higgs production

*Monday 6 May 2013 14:30 (15 minutes)*

I will discuss the connections between the recently observed Higgs-like particle and rare B decays in the context of two Higgs doublet models (2HDMs). The measured decays of the Higgs boson to fermions and gauge bosons, along with the observation of the decay  $B_s \rightarrow \mu^+ \mu^-$ , place stringent restrictions on the allowed parameter space of 2 Higgs doublet models. Future measurements of  $h_0 \rightarrow \gamma \gamma$  can potentially exclude type I 2HDMs, while the parameters of other 2HDMs are already severely restricted. The recent observations of the  $h_0 \rightarrow \tau^+ \tau^-$  and  $h_0 \rightarrow b \bar{b}$  decays further constrain the models.

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