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Probing the Physics of W's and b's from the Tevatron to the LHC

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Collider signatures containing W bosons and b quarks are particularly interesting. The top quark decays to a W and a b nearly 100% of the time; hence studies of top, through both single top and top pair production, rely on an intimate knowledge of the final state containing W's and b's.
In the low-mass hypothesis (M_H < 130 GeV/c^2), the standard model Higgs boson is predicted to decay predominantly to a pair of b quarks. At the Tevatron the most sensitive Higgs production mechanism is for Higgs production in association with a W boson, producing a signature containing a W and 2 b jets. Additionally, several models of physics beyond the standard model contain signatures containing W's and b's. Measurements and searches with this signature rely on innovative particle identification techniques and precise knowledge of the processes that contribute to this sample. Here we will present an overview of the physics of the W+b final state, using CDF Tevatron results as a guide to what to look for at the LHC.

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