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Probing H^{\pm} with the μ_x boosted bottom-jet tag

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We present the discovery potential for a TeV-scale H^{\pm} though its decays to boosted heavy quarks $(pp \rightarrow tH^{\pm} + X \rightarrow t(tb) + X)$. In the alignment limit of a type-II two Higgs doublet model, searches for H^{\pm} effectively constrain its neutral siblings (H/A). We tag massive $H^{\pm} \rightarrow tb$ by pairing a high-efficiency boosted-top tag with our low fake-rate μ_x boosted bottom-jet tag (which rejects high- p_T light jets ~10 times better than prior b tags). The success of the μ_x tag to suppress QCD background for H^{\pm} events further validates its usefulness in the high- p_T regime (as was already demonstrated in generic W' and leptophobic Z' searches).

Summary

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