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Single vector-like B-quark search in the B to tW decay channel at FCC-hh

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We study single production of heavy vector-like bottom (VLB) quark partner and its decay to a top quark and W boson at the future circular hadron collider (FCC-hh) with high center of mass energy of 100 TeV. The results show that the mixing between the vector-like quark and third generation quarks can largely enhance the production cross section. We analyze the final state kinematical distributions for all hadronic mode. Studying the observability of single VLB quark through the process pp->Bbq+X, we set attainable mass limits depending on different coupling strength relevant to the single production at FCC-hh.

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