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Theoretical analysis of rare decay $B^+ \to \pi^+\tau^+\tau^-$

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The physics of bottom hadrons plays a fundamental role both in the precision tests of the Standard Model (SM) and in searches of possible New Physics (NP). Rare B-meson decays, which are induced by the Flavor-Changing Neutral Currents (FCNCs) $b \to s(d)$ transitions, provide a stringent test of the SM in flavor physics. Being loop-induced in the SM, these transitions are suppressed and NP effects can increase substantially their decay widths. In this talk we discuss the extremely rare decay $B^+ \to \pi^+\tau^+\tau^-$. We present its dilepton invariant-mass spectrum and decay rate calculated in the effective electroweak Hamiltonian approach for the $b \to d\ell^+\ell^-$ transitions in the SM, accounting long-distance contributions, for different types of the $B \to \pi$ formfactor parameterizations.
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