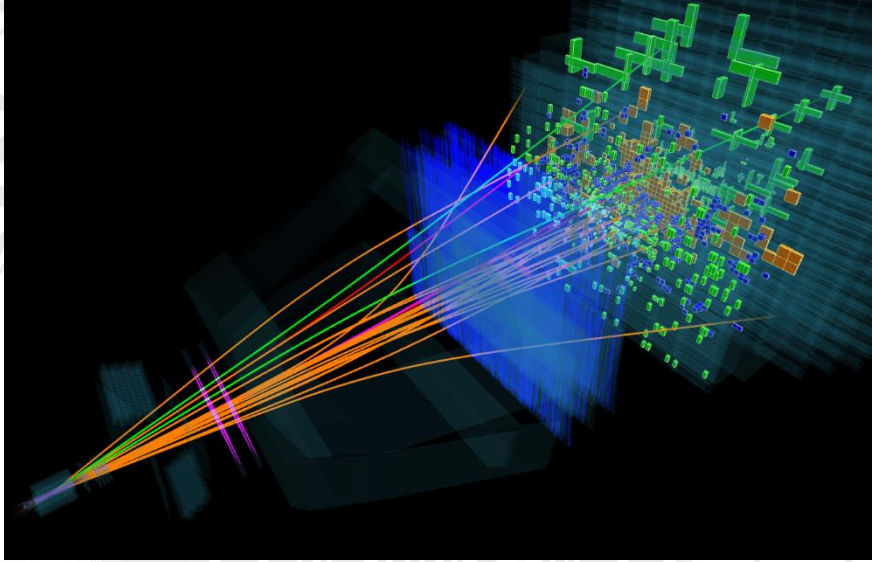


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Probing the Standard Model with precision flavour measurements

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Precision measurements of heavy flavour decays constitute powerful tests of the Standard Model of particle physics. New heavy particles beyond the Standard Model can significantly affect flavour observables through virtual quantum corrections. Precision measurements of these observables can reveal potential deviations from Standard Model predictions, and thereby probe energy scales far beyond the beam energies currently available at colliders.

Rare decays of b-hadrons allow for particularly stringent tests, as these processes are heavily (loop-)suppressed in the Standard Model and can therefore be significantly affected by virtual contributions from new heavy particles. I will present recent key results in this area, including measurements of decay rates and angular observables that have shown tensions with Standard Model predictions. Furthermore, I will discuss possible interpretations and give prospects for clarifying these tensions with the LHCb experiment in the LHC Run 3 and beyond. Finally, I will conclude with a brief outlook on the LHCb Upgrade II, which will allow to fully exploit the flavour-physics opportunities at the HL-LHC.