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N3LO predictions for the decay of the Higgs boson to bottom quarks

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We present a fully-differential calculation of the $H \rightarrow b\bar{b}$ decay at next-to-next-to-next-to-leading order (N3LO) accuracy. Our calculation considers diagrams in which the Higgs boson couples directly to the bottom quarks. In order to regulate the infrared divergences present at this order we use the Projection-to-Born technique coupled with N-jettiness slicing. After validating our methodology at next-to-next-to-leading order (NNLO) we present exclusive jet rates and differential distributions for jet observables at N3LO accuracy using the Durham jet algorithm in the Higgs rest frame.

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