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Novel $|V_{cb}|$ extraction via Lorentz-boosted bc-tagging at the LHC

We present a novel method for measuring $|V_{cb}|$ at general-purpose experiments at the LHC using an advanced boosted-jet tagger to identify "bc signatures". When combined with the conventional small-radius jet approach, this method achieves a ~30% improvement in $|V_{cb}|$ precision under HL-LHC projections, providing valuable insights into the V_{cb} puzzle. By leveraging Lorentz-boosted topology, it substantially suppresses backgrounds and effectively reduces uncertainties in flavor tagging efficiencies through an in-situ calibration technique, critical for enhancing measurement precision.
This poster is based on the work of 2503.00118.

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