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Lambda_c to Sigma pi pi decays at Belle

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Recent model-independent measurements of the absolute branching ratio of the normalisation mode Lambda_c -> p^+ K^- pi^+ by the Belle1 and BES32 collaborations have significantly increased the precision of previously measured decay channels. BES3 also independently updated the value for the Sigma^+ pi^- pi^+ mode, however the branching fraction into the Sigma^0 pi^0 pi^+ decay channel has not been improved upon since the measurement by the CLEO3 collaboration.

We report new measurements of the branching fractions of the decays Lambda^+_c -> Sigma^+ pi^- pi^+, Sigma^0 pi^0 pi^+ and Sigma^+ pi^0 pi^0 based on 711/fb of integrated luminosity recorded with the Belle detector at the KEKB asymmetric energy e^+e^- collider near the Upsilon(4S) resonance (charge conjugated decays are implicitly included). All results are obtained relative to Lambda_c -> p^+ K^- pi^+. This is the first measurement of the Lambda^+_c -> Sigma^+ pi^0 pi^0 channel. The measurements of the other modes are significantly more precise compared to previous analyses and of similar precision to the recent BES3 results.

1 A. Heller et al. (Belle Collaboration) Phys. Rev. D 91, 112009 (2014)

2 M. Ablikim et al. (BESIII Collaboration) Phys. Rev. Lett. 116, 052001 (2015)

3 P. Avery et al. (CLEO Collaboration) Physics Letters B, Volume 325, Issue 1 (1994)

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