Charmed baryon spectroscopy and decays

Section Editors

BaBar: Mat Charles
Belle: Roman Mizuk
Theory: (not assigned)

B-factories Legacy Book Meeting
SLAC, Oct 30-31
Papers

BaBar
Published

Belle
Published

Foreseen papers in time to be included in the book:
(none on radar)

Summary of papers (BaBar+Belle):
PRL: 8
PRD: 7
PLB: 4
Pending: 2
Section subdivision

1. Spectroscopy of charmed baryons
   1. Introduction
      1. Overview & terminology
      2. Quark model expectations for ground states
      3. Phenomenological predictions for higher states
   2. The $\Lambda_c$ and $\Sigma_c$ families of states
   3. The $\Xi_c$ family of states
   4. The $\Omega_c$ family of states
   5. Searches for $\Xi_{cc}$ states
   6. Conclusions

2. Weak decays of charmed baryons
   1. Introduction
   2. Results and discussion
      1. $\Lambda_c^+$
      2. $\Xi_c^0$ and $\Xi_c^+$
      3. $\Omega_c^0$
   3. Comments on absolute branching fractions

3. Applications to light baryon spectroscopy
   1. Introduction and terminology
   2. Measuring the $\Omega^-$ spin
   3. Properties of the $\Xi(1530)$ and $\Xi(1690)$
   4. Conclusions

4. Outlook

Approximate expected # pages needed for whole section: unclear yet!
Inter-correlation

Several cases where papers involve charmed baryons but main thrust of analysis belongs in another section:

• Exclusive B decays to charmed baryons ($\rightarrow$ baryonic B decays)
• Inclusive momentum spectra of baryons ($\rightarrow$ fragmentation and/or baryonic B decays)
• $\Lambda_c^+ \Lambda_c^-$ pair production with popcorn ($\rightarrow$ fragmentation)
• $\Lambda_c^+ \Lambda_c^-$ pair production in ISR events ($\rightarrow$ ISR? Exotics?)

Section editors for baryonic B decays & fragmentation contacted.
Resolution: those analysis topics will be covered elsewhere (i.e. not by us)

Subset of the above include results on charmed baryon spectroscopy / decays in same paper. In those cases, we’ll cover that part.

• Example: $B^- \rightarrow \Lambda_c^+ p \pi^-$ includes results on $\Sigma_c$ resonances.
Contributors

Confirmed (beside section editors)
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* Volunteer for reading/editing/criticism
Comments