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## Recent Advances in Hadron Production in $e+e-$ Annihilation at BESIII

*Monday, 8 July 2024 17:30 (20 minutes)*

This talk will present recent experimental findings at BESIII, encompassing three distinct studies. Firstly, the search for the production of deuterons and antideuterons in  $e+e-$  annihilation at center-of-mass energies between 4.13 and 4.70 GeV is discussed. The investigation aims to unravel the production mechanisms and properties of these light nuclei, shedding light on the dynamics of hadronization and quark-gluon interactions. Secondly, the measurement of the Born cross-section of  $e+e- \rightarrow \Sigma^+ \text{ anti-}\Sigma^-$  at center-of-mass energies between 3.510 and 4.951 GeV is addressed. This study provides valuable insights into the production of  $\Sigma^+ \text{ anti-}\Sigma^-$  pairs in  $e+e-$  collisions, contributing to our understanding of hadron dynamics in this energy regime. Finally, the observation of significant flavor-SU(3) breaking in the kaon wave function at  $12 \text{ GeV}^2 < Q^2 < 25 \text{ GeV}^2$  and the discovery of the charmless decay  $\psi(3770) \rightarrow K^0_S K^0_L$  are discussed. These results offer new perspectives on the flavor dynamics within the kaon wave function and the rare decay processes involving the  $\psi(3770)$  resonance.

### session

E. Hadron and Nuclear Interactions

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