Title:	Search for tetraquark states X c c ¯ s ¯ s in D + s D + s (D * + s D * + s) final states at Belle
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Abstract:	A search for double-heavy tetraquark state candidates X c c ¯ s ¯ s decaying to D + s D + s and D * + s D * + s is presented for the first time using the data samples of 102 × 10 6 Y (1 S) and 158 × 10 6 Y (2 S) events, and the data samples at √ s = 10.52 , 10.58, and 10.867 GeV corresponding to integrated luminosities of 89.5, 711.0, and 121.4 fb − 1 , respectively, accumulated with the Belle detector at the KEKB asymmetric energy electron-positron collider. The invariant-mass spectra of the D + s D + s and D * + s D * + s are studied to search for possible resonances. No significant signals are observed, and the 90% confidence level upper limits on the product branching fractions [B (Y (1 S , 2 S) → X c c ¯ s ¯ s + anything) × B (X c c ¯ s ¯ s → D + s D + s (D * + s D * + s))] in Y (1 S , 2 S) inclusive decays and the product values of Born cross section and branching fraction [σ (e + e − → X c c ¯ s ¯ s + anything) × B (X c c ¯ s ¯ s → D + s D + s (D * + s D * + s))] in e + e − collisions at √ s = 10.52 , 10.58, and 10.867 GeV under different assumptions of X c c ¯ s ¯ s masses and widths are obtained.
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