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## Resonant Charmonium Pair Production: A Comprehensive Review of Theoretical and Experimental Advances

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The narrow resonant-like structures were discovered by three main LHC collaborations (LHCb, ATLAS, CMS) in the di- $J/\psi$ ,  $J/\psi$ - $\Psi(2S)$  invariant mass spectra suggesting existence of the fully-heavy tetraquarks with a  $c\bar{c}(b\bar{c})$  configuration. These new exotic resonances require detailed theoretical and experimental investigation. In this review, the latest experimental results and several theoretical approaches towards physics of new states are presented.

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