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Observation of a double charged tetraquark state and its neutral partner at LHCb

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The discoveries of meson-like exotic states have been attracting huge interest from the hadron physics community. A doubly charged tetraquark, T_csbarˆa(2900)ˆ++, and its neutral partner, T_csbarˆa(2900)ˆ0, are observed in the combined anplitude analysis of B+ -> D- Ds+ pi+ and B0 -> D0bar Ds+ pi- decays, based on the totally 9 fbˆ-1 pp collision datasets collected by LHCb Collaboration. They are the manifestly tetraquark candidates, with the minimum quark contents [c\bar{s}u\bar{d}] and [c\bar{s}\bar{u}d]. It's the first observation of a doubly charged meson and its isospin partner, which belong to the same isospin triplet. The masses, widths and spin-parity numbers of new exotic resonances are measured in the analysis. The measured masses of them are similar with the X0(2900) ([cs\bar{u}\bar{d}]) previously observed in LHCb, but the width and flavor contents are different.

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