

# Studies of open-double-charm exotic states at LHCb

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With LHC Run2 data becoming available, a plethora of new states was discovered at LHCb. Among those, are the open charm exotic states, namely, tetraquarks with quark content of  $(c\bar{c}qq)$  and pentaquarks with quark content  $(c\bar{c}qqq)$ . More recently, in 2021 an open-double-charm tetraquark state, named,  $T_{cc}^+$  was discovered, with a quark content of  $(c\bar{u}c\bar{d})$ . This is the longest-lived exotic matter particle ever discovered. Since the nature of tetraquarks states is not fully understood, observation and discovery of new hadrons serve as an excellent probe into the production mechanism and interaction properties of resonances decaying via the strong interaction. A tetraquark state having two heavy quarks as a constituent is even more exotic. Such discovery paves the way to studying a new family of tetraquarks whereby existing theoretical models could be put to the test or previously unreachable effects could be observed.

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