**ICHEP 2022** 



Contribution ID: 509

Type: Parallel Talk

## Double charm tetraquark in $DD^*$ scattering from lattice QCD

Saturday, 9 July 2022 16:05 (15 minutes)

The LHCb collaboration recently discovered a doubly charmed tetraquark  $T_{cc}$  with flavor  $cc\bar{u}d$  just 0.36(4) MeV below  $D^0D^{*+}$  threshold. This is the longest lived hadron with explicitly exotic quark content known to this date. We present the first lattice QCD study of  $DD^*$  scattering in this channel, involving rigorous determination of pole singularities in the related scattering amplitudes that point to the existence of  $T_{cc}$ . Working with a heavier than physical light quark mass, we find evidence for a shallow virtual bound state pole in the  $DD^*$ scattering amplitude with l = 0, which is likely related to  $T_{cc}$ .

## **In-person participation**

Yes

**Primary authors:** MADANAGOPALAN, Padmanath (Helmholtz Institut Mainz); Prof. PRELOVSEK, Sasa (Jozef Stefan Institute, Ljubljana, Slovenia)

Presenter: MADANAGOPALAN, Padmanath (Helmholtz Institut Mainz)

Session Classification: Strong interactions and Hadron Physics

Track Classification: Strong interactions and Hadron Physics