

# Properties of the $T_{cc}(3875)$ and its heavy-quark spin partner in nuclear matter

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We discuss the modification of the properties of the tetraquark-like  $T_{cc}^+(3875)$  in dense nuclear matter. We consider the  $T_{cc}^+$  in vacuum as a purely molecular isoscalar ( $D^0 D^{*+}/D^+ D^{*0}$ ) bound state in  $S$ -wave, generated from a heavy-quark symmetry leading-order interaction between the charmed mesons. We compute the  $D$  and  $D^*$  spectral functions embedded in a nuclear medium and use them to determine the corresponding  $T_{cc}^+$  self energy and spectral function. We find important modifications of the  $DD^*$  scattering amplitude and of the pole position of the  $T_{cc}^+$  exotic state already for  $\rho_0/2$ , with  $\rho_0$  the normal nuclear density. We also discuss the dependence of these results on the  $DD^*$  molecular component in the  $T_{cc}^+$  wave-function. Finally, we perform a similar analysis for the isoscalar  $J^P = 1^+$  heavy-quark spin symmetry partner of the  $T_{cc}^+$  ( $T_{cc}^{*+}$ ) by considering the  $D^{*0} D^{*+}$  scattering  $T$ -matrix.

## Collaboration

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