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Properties of the Tcc(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 embeded 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 ρ_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.

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