



Contribution ID: 77

Type: **Plenary talk**

Charge-conjugation asymmetry and molecular content: the $T_{cc}(3875)$ and $D_s(2317)$ in nuclear matter

Monday, 8 July 2024 09:40 (40 minutes)

We analyze the modifications that a dense nuclear medium induces in the $D_s(2317)^\pm$ and $T_{cc}(3875)^\pm$. In the vacuum, we consider them as isoscalar DK ($D\bar{K}$ and $D\bar{K}$) and DD ($D\bar{D}$ and $D\bar{D}$) S-wave bound states, which are dynamically generated from effective interactions that lead to different Weinberg compositeness scenarios. Matter effects are incorporated through the two-meson loop functions, taking into account the self energies that the D, D , $D\bar{K}$, $D\bar{K}$, K and \bar{K} develop when embedded in a nuclear medium. Although $D_s(2317)$ and $T_{cc}(3875)$ particle-antiparticle lineshapes are the same in vacuum, we find extremely different density patterns in matter. This charge-conjugation asymmetry for the $D_s(2317)$ [$T_{cc}(3875)$] mainly stems from the very different kaon [$D\bar{K}$ and $D\bar{K}$] and antikaon [D and D] interaction with the nucleons of the dense medium. We show that the in-medium lineshapes found for these resonances strongly depend on their DK and DD molecular contents, respectively, and discuss how this novel feature can be used to better determine/constrain the inner structure of these exotic states.

session

D. Hadron Decays

Primary author: NIEVES, Juan M (IFIC (CSIC-U. Valencia))

Presenter: NIEVES, Juan M (IFIC (CSIC-U. Valencia))

Session Classification: Plenary session