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The ϕ -N and ϕ -nucleus interaction from theory and experiment

Thursday, October 31, 2024 10:00 AM (30 minutes)

While the ϕ meson vacuum properties, such as mass and width, are well known, it is not clear how these properties will change once it is put in a dense environment such as nuclear matter. To study how the ϕ meson behaves at finite density has been the goal of several past and near future experiments at KEK, COSY-ANKE and J-PARC. Recently, ALICE has also obtained novel experimental data constraining the ϕ -N interaction. In this talk, I will discuss how these new data can be interpreted from a theoretical point of view, and how they possibly can be used to constrain the nuclear matter properties of the ϕ meson, including its longitudinal and transverse polarization modes, which due to the breaking of Lorentz symmetry in nuclear matter, can be modified differently. I will review theoretical predictions for the in-medium modifications of these quantities and discuss how they could be measured at the future J-PARC E16 and E88 experiments.

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