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Quarkonia Spectral Functions from (2+1)-flavor QCD using Non-perturbative Thermal Potential

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Quarkonia, the bound states of heavy quark-antiquark pairs, are crucial probes for studying quark-gluon plasma (QGP). The color screening properties of the QGP weaken the interactions between quark-antiquark pairs, leading to the suppression of quarkonia yields within the QGP. Here, we present some preliminary results on the fate of quarkonia bound states in the QGP by performing spectral reconstruction from lattice correlators. The spectral function is reconstructed by combining the vacuum part, which is valid at large energy, with the part obtained from the thermal potential near the threshold. We observe that this spectral function effectively describes the lattice data. Our findings indicate that the thermal interaction shifts the bound state mass and results in a significantly larger thermal width. In the charmonium system, the width is much larger than in the bottomonium system.

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