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Pseudo-scalar meson spectral properties from spatial hadron correlators

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At extreme temperatures the behavior of hadronic matter depends on the type of excitations that can exist in a thermal medium. This information is encoded within the spectral functions of hadronic correlators. Using lattice data for correlators of pseudo-scalar meson operators in $2 + 1$ flavour QCD we investigate the presence of particle-like excitations, so-called thermoparticles. In particular, we extract the spectral contribution of these potential excitations from spatial correlators at two temperatures close to the pseudo-critical temperature, and test the robustness of these components by comparing their temporal correlator predictions with the corresponding data. Our findings suggest that pseudo-scalar mesons have a bound-state-like structure within the chiral crossover region, and this is influenced by the vacuum states of the theory.

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