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Spatial meson correlators at non-zero and dissolution of charmonium states PETER PETRECZKY, Brookhaven Natl Lab, ALEXEI BAZAVOV, University of Iowa, FRITHJOF KARSCH, SWAGATO MUKHERJEE, YU MAEZAWA, Brookhaven Natl Lab — We study charmonium correlation functions in spatial directions in lattice QCD at non-zero temperature. We perform calculations in 2+1 flavor QCD with phyical values of the quark masses using highly improved staggered quark (HISQ) formulation. Athough the relation between the spatial charmonium correlation function and the spectral properties of charmonium is a bit complicated, spatial correlation functions can be studied at large separations and therefore are very sensitive to the in-medium modification and/or melting of charmonium states. We find that the correlation functions corresponding to 1S state show small modification around the transition temperature, but the modifications are are very large at temperatures T>300 MeV, consistent with the dissolution of the bound state. The correlation functions corresponding to 1P charmonium on the other hand, show significant in-medium modifications at the transition temperature. This confirms the expected sequential melting pattern of different charmonium states. Finally we compare the temperature dependence of charmonium correla.

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