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In-medium heavy quarkonium from lattice NRQCD

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We present the final results from a multi-year [1,2] study of the in-medium spectral properties of heavy quarkonium bound states on the lattice. In this work we combine high statistics $N_f=2+1$ ensembles from the HotQCD collaboration with the effective theory NRQCD and improved Bayesian spectral reconstruction methods. We corroborate earlier findings on the sequential suppression of quarkonium states with respect to their binding energy and provide updated values on the melting temperatures. In particular we are able to overcome previous disagreements between different Bayesian methods.

The main result is our first robust determination of the in-medium mass shifts of quarkonium ground states, which we find are negative, consistent with the behavior observed in potential based computations.

[1] S. Kim, P. Petreczky, A.R., PRD91 (2015) 054511

[2] S. Kim, P. Petreczky, A.R., Nucl.Phys. A967 (2017) 724 and in preparation

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