Abstract Submitted for the APR18 Meeting of The American Physical Society

The static hard-loop gluon propagator to all orders in anisotropy¹ MOHAMMAD NOPOUSH, Kent State Univ - Kent, YUN GUO, Guangxi Normal University, China, MICHAEL STRICKLAND, Kent State Univ - Kent — We calculate the (semi-)static hard-loop self-energy and propagator using the Keldysh formalism in a momentum-space anisotropic quark-gluon plasma. The static retarded, advanced, and Feynman (symmetric) self-energies and propagators are calculated to all orders in the momentum-space anisotropy parameter ξ . For the retarded and advanced self-energies/propagators, we present a concise derivation and comparison with previously-obtained results and extend the calculation of the self-energies to next-to-leading order in the gluon energy, ω . For the Feynman self-energy/propagator, we present new results which are accurate to all orders in ξ . We compare our exact results with prior expressions for the Feynman selfenergy/propagator which were obtained using Taylor-expansions around an isotropic state. We show that, unlike the Taylor-expanded results, the all-orders expression for the Feynman propagator is free from infrared singularities. Finally, we discuss the application of our results to the calculation of the imaginary-part of the heavy-quark potential in an anisotropic quark-gluon plasma.

¹U.S. Department of Energy, Office of Science, Office of Nuclear Physics under Award No. DE-SC0013470, NSFC of China under Project Nos. 11665008 and 11647309, Natural Science Foundation of Guangxi Province of China under Project No. 2016GXNSFFA380014

> Mohammad Nopoush Kent State Univ - Kent

Date submitted: 11 Jan 2018

Electronic form version 1.4