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## Scalar fields damping in a thermal plasma

*Friday, June 2, 2023 9:20 AM (20 minutes)*

The behavior of scalar fields in a thermal plasma plays an important role in the study of the early universe, and it is relevant for addressing problems in astrophysics and cosmology. In this talk, we present a calculation of the dissipation rate in a simple scalar model at a finite temperature. We discuss the impact of thermal masses on the quasi-particle kinematics and show the different allowed regimes for different processes, such as decay, inverse decay, and Landau damping. We point out and correct an error in an earlier computation in [1]. For some parameter choices, our correction can significantly change the evolution of the system. These results could be implemented in models of inflation, and have implications for reheating, baryogenesis, and dark matter, among others.

[1] M. Drewes, J. U. Kang, Nucl. Phys. B 875 (2013) 315–350, arXiv.1305.0267 [hep-ph]

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