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## Effects of temperature and energy scale on jet thermalization

Jet thermalization is a useful tool for investigating the properties of the quark-gluon plasma (QGP) formed in relativistic heavy-ion collisions. Temperature and energy are two important scales in jet thermalization. In this study, we discretize the collision kernel of scalar theory to directly compute the eigenvalues and eigenmodes of the evolution operator, enabling an analysis of the roles of temperature and energy scales. The initial jet is simplified to a Gaussian wave packet for computational efficiency, with transformation matrices introduced for both scales to explore how different settings influence jet thermalization. Our findings highlight the impact of distinct temperature and energy scales on the QGP's non-equilibrium evolution, offering new insights into the thermalization process in high-temperature QCD matter.

### Category

Theory

### Collaboration (if applicable)

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