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Thermal contributions to the soft dijet function

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We present the first analysis of event shape distributions in e+e- annihilation into a dijet pair in a high-temperature quark-gluon plasma in thermal equilibrium. We focus on temperatures much smaller than the jet mass, such that the jet function remains unresolved by medium fluctuations. In this limit, the medium influences the cross-section of the process only through the dijet soft function that describes the inter-jet activity and is a central ingredient for several event shape observables, such as thrust and jet mass distributions. Concretely, we calculate moments of the soft function by extracting the expectation values of energy flow operators, that are in turn closely related to energy-energy correlations. We demonstrate that, at next-to-leading (g^2) order, the thermal contribution to the moments of the hemisphere mass distribution factorise, which allows us to resum all moments and thus reconstruct the full soft function. Finally, we comment on higher-order (g^4) corrections and the relevance of event shape observables in the context of the ongoing ultrarelativistic heavy-ion experiments.

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