

Photons at RHIC and at the LHC: the role of viscosity and of event-by-event fluctuations

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We investigate the yield and the azimuthal anisotropy of produced photons in heavy-ion collisions at RHIC and at LHC energies. We study the photons produced from a variety of sources, including those from primordial nucleon-nucleon collisions, from thermal partons, from fragmenting QCD jets, from jets interacting with thermal partons, and from thermal hadrons. We study the interplay of those sources, in an evolving 3D simulation of the colliding system that involves hydrodynamics and hard jets. We study ideal and viscous fluids, and we evaluate the effect of fluctuating initial conditions, and of using different hadronic equations of state. Under all of the above conditions, we quantify the ability of real photons to act as penetrating probes of the hot and dense strongly interacting medium.

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