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Constraining the quark-gluon plasma viscosity with thermal photons[1] ULRICH HEINZ, The Ohio State University, CHUN SHEN, JEAN-FRANCOIS PAQUET, CHARLES GALE, McGill University — Because photons interact only electromagnetically, photons produced in high-energy heavy-ion collisions can escape from the fireball during all collision stages, especially from its hot core. Using state-of-the-art viscous hydrodynamic calculations with fluctuating initial conditions, it is demonstrated that by measuring the anisotropy of photons one may infer the viscosity of QCD matter independently from hadronic observables. For photons, viscous corrections to the emission rates are found to have a larger effect on the anisotropic flow coefficients than the viscous suppression of hydrodynamic flow anisotropies. It is pointed out that the ratio of elliptic to triangular flow, v_2/v_3, allows to discriminate between hydrodynamic and other suggested origins of the measured photon flow anisotropies. The spacetime regions which contribute dominantly to the photon flow anisotropies are identified, and interesting novel features of the directed flow v_1 of thermal photons for RHIC and LHC energies are explored.

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Ulrich Heinz
The Ohio State University

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