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An estimate for the thermal photon rate from lattice QCD

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We estimate the production rate of photons by the quark-gluon plasma in lattice QCD. We propose a new correlation function which provides better control over the systematic uncertainty in estimating the photon production rate at photon momenta in the range $\pi T/2$ to $2\pi T$. The relevant Euclidean vector current correlation functions are computed with $N_f = 2$ Wilson clover fermions in the chirally-symmetric phase. In order to estimate the photon rate, an ill-posed problem for the vector-channel spectral function must be regularized. We use both a direct model for the spectral function and a model-independent estimate from the Backus-Gilbert method to give an estimate for the photon rate.

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