

# Seminar

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## The thermal photon rate from dynamical lattice QCD

We estimate the production rate of photons from the quark-gluon plasma in lattice QCD. The production of weakly-interacting particles from a strongly-interacting medium has applications to particle cosmology and heavy-ion phenomenology. We propose a new observable which gives us better control over the systematic uncertainty in estimating the rate at large photon momenta. The relevant Euclidean vector current correlation functions are computed with  $N_f=2$  Wilson clover fermions in the relevant chirally-symmetric phase.

In order to estimate the photon rate from the Euclidean vector current correlation functions, an inverse problem for the vector-channel spectral function must be solved. We use both a direct model for the spectral function and a model-independent estimate from the Backus-Gilbert method to give a robust estimate for the photon rate at momenta close to its maximum. At low photon momenta, the existence of a narrow diffusion pole in the retarded correlation – a universal hydrodynamic prediction – makes the extraction of the photon rate challenging. The results are compared with recent predictions from pure gauge theory and weak-coupling effective theory.

**Friday, 29.09.2017, 11:15 Uhr**

**Place: D6-135**