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Photon Pair Production at the LHC Higgs Signal and QCD Backgrounds

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I present a QCD calculation of the transverse momentum distributions of Higgs bosons, and of photon pairs produced by 'background' QCD subprocesses, including all-orders soft-gluon resummation valid at next-to-next-to-leading logarithmic accuracy. Resummation is needed to obtain predictions valid in the ranges of transverse momentum where the cross sections are largest. I compare theresults with data from the Fermilab Tevatron and make predictions for the Large Hadron Collider. The QCD 'background' is shown to have a softer spectrum than the signal.

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