Direct Photon Production in Association with a Heavy Quark
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inclusive cross section for a direct photon and a heavy quark (charm or bottom),
$p + \bar{p}(p) \rightarrow \gamma + Q + X$, is calculated up to second order in the strong coupling
constant α_s. The photon fragmentation function, which is of order α/α_s, where
α is the electromagnetic coupling constant, needs to be convoluted with all QCD
subprocesses of order α_s^3 containing a heavy quark in the final state so that the
cross section is complete to next-to-leading order (NLO). This calculation extends
previous efforts by including this NLO contribution. The cross section for photon
plus heavy quark production can provide a useful check of the method used for the
calculation of the heavy quark's parton distribution functions, which are currently
determined with the use of the Altarelli-Parisi equation. The dependence of the
cross section on the photon and heavy quark transverse momenta and rapidities will
be examined. Predictions for both the Tevatron and the LHC will be presented.

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