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Beacons of light–photon emission from hadronic collisions

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Direct photons do not interact strongly with the medium produced in relativistic heavy-ion collisions, which makes them an exceptional observable: at intermediate p_T they provide information on the early stage of heavy-ion collisions; at high p_T they constitute a crucial reference for the medium modification of high- p_T hadron production which has been observed. The PHENIX experiment at RHIC has found a significant excess of direct photons above the background from decay photons in Au+Au collisions at 200 GeV at both high and intermediate p_T . Furthermore, direct photon production in p+p and d+Au collisions has been measured, allowing a fundamental test of QCD as well as constraining the effects of cold nuclear matter. A systematic study of direct photon production will be presented and put into the context of theoretical models and earlier measurements.