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Anomalous soft photon production from QCD vacuum polarization

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Anomalous soft photon production beyond that predicted by standard Bremsstrahlung calculations is a ubiquitous feature in high energy processes, from e+e- to heavy ion collisions. We calculate the electromagnetic current due to the QCD vacuum polarization induced by the qq jets in e+e- annihilation using the Schwinger model, and source Maxwell's equations with it. The predicted soft photon emission reproduces the DELPHI Collaboration's observations in e+e- annihilation, exhibiting several times the signal expected from traditional Bremsstrahlung radiation. We will discuss the implications of our results for the soft photon production in heavy ion collisions.

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