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Photon emission from strongly magnetized QCD plasma¹ IGOR SHOVKOVY, Arizona State University, XINYANG WANG, Jiangsu University, LANG YU, Jilin University, MEI HUANG, University of Chinese Academy of Sciences — By making use of an explicit Landau-level representation for the imaginary part of the photon polarization tensor, the direct photon emission from a strongly magnetized quark-gluon plasma is calculated. The leading order contribution comes from the three processes of the zeroth order in the coupling constant α_s : (i) the quark splitting ($q \rightarrow q + \gamma$), (ii) the antiquark splitting ($\bar{q} \rightarrow \bar{q} + \gamma$), and (iii) the quark-antiquark annihilation ($q + \bar{q} \rightarrow \gamma$). It is found that the Landau-level quantization leads to a nontrivial momentum dependence of the photon ellipticity coefficient v_2 , which takes negative values at small transverse momenta and positive values at large transverse momenta. The crossover between the two regimes occurs around $k_T \simeq \sqrt{|eB|}$. The nonisotropic photon emission may explain in part a large positive value of v_2 for the direct photons produced in ultrarelativistic heavy-ion collisions.

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