Contribution ID: **258** Type: **Parallel Session Talk**

Radiative leptonic decay $B \to \gamma \ell \nu_\ell$ with subleading power corrections

Wednesday 10 April 2019 10:45 (35 minutes)

We discuss the QCD predictions for the radiative decay $B \to \gamma \ell \nu_\ell$ with an energetic photon in the final state by taking into account the $1/E_\gamma, 1/m_b$ power-suppressed hard-collinear and soft corrections from higher-twist B-meson light-cone distribution amplitudes (LCDAs). The soft contribution is estimated through a dispersion relation and light-cone QCD sum rules. The analysis of theoretical uncertainties and the dependence of the decay form factors on the leading-twist LCDA $\phi_+(\omega)$ shows that the latter dominates. The radiative leptonic decay is therefore well suited to constrain the parameters of $\phi_+(\omega)$, including the first inverse moment, $1/\lambda_B$, from the expected high-statistics data of the BELLE II experiment.

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Session Classification: WG5: Physics with Heavy Flavours

Track Classification: WG5: Physics with Heavy Flavours