

Photon Splitting to electron-positron

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- A photon emitted via internal or external bremsstrahlung can split (via a higher order QED process) into an electron-positron pair
- There is a photon energy-dependent form-factor for this internal splitting of the photon
- There is a paper by Min-Shih Chen and Peter Zerwas
 - “*Equivalent-particle approximations in electron and photon processes of higher-order QED*”
 - PRD Volume 12, number 1, 1 July 1975, page 187
- This paper predicts form-factor for photon splitting of the form $(\alpha/\pi) \log (E_\gamma / mass_electron)$

Summary

- Form-factor for photon splitting has been calculated in the effective-particle approximation by Chen and Zerwas
- We would like to add this form-factor to our simulation machinery and test the size of its effect