

## Measuring QED Radiative Bhabha to $10^{-4}$ with the LumiCal

The QED Bhabha interaction is the most precisely predicted approaching  $10^{-4}$  precision as the reference channel for Luminosity measurement at the  $e^+e^-$  collider experiments. The BHLUMI generator developed at LEP is employed for the LumiCal proposed for the CEPC Higgs factory requiring minimum systematics errors to  $10^{-3}$  at Higgs mass and  $10^{-4}$  at Z-pole. Bhabha events shall be measured to interpret the deviation due to radiative photons. Distribution and detection of photons are interpreted for  $e/\gamma$  identification with the LumiCal detector modules. The BHWIDE generator based also on the YFS exponentiation mechanism is also studied for the center of mass energy at the 10 GeV level. Radiative Bhabha detection has not been measured to better than 1%. By measuring radiative photons the Bhabha interaction can be measured for the NLO interpretation,

**Primary author:** HOU, Suen (IPAS)

**Presenter:** HOU, Suen (IPAS)

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