6.3 Size of Effects

We wish to investigate quantitatively the effect of these extra terms on the 0^{th} order energy loss. To do so we enforce physicality by restricting the x and $\mathbf{k}$ integration limits so that the emitted photon has $E_\gamma \geq m_g$ and leaves the jet with $E_{jet} \geq M_Q$. For ease of comparison with [305] we set $\mu = .5$ GeV and $\alpha = .5$ fixed. One can see from Fig. 6.2 the large (50-150%) effect on $\Delta E/E$ of including the overall prefactor of $(1-x)^2$. Filling in the "dead cone" makes only a small difference to the energy lost (5-20%); this is a surprise as the "dead cone" is the usual naive justification for heavy quarks having smaller radiative energy loss than light quarks.

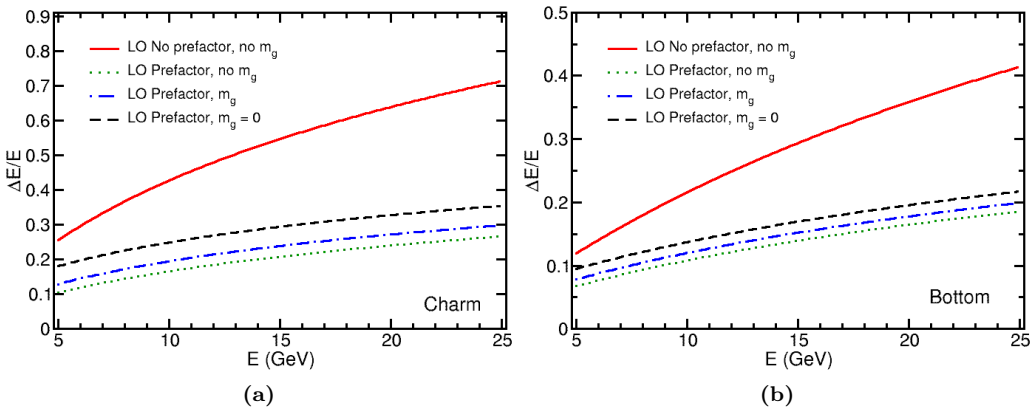

Figure 6.2: *(Color online)* 0^{th} *order radiative energy loss for (a) charm and (b) bottom quarks. All results are to leader order (LO) in* $1/E^+$*. One sees that the largest effect (50-150%) comes from including the* $(1-x)^2$ *prefactor and that filling in the "dead cone" with the massive photon is a rather small one (5-20%). Comparison with* $m_\gamma = 0$ *yields the magnitude of the LO Ter-Mikayelian effect (10-40%).*