

Fig. 7.18. Energy loss mechanisms of electrons as a function of the electron energy (Møller scattering: $e^-e^- \rightarrow e^-e^-$; Bhabha scattering: $e^+e^- \rightarrow e^+e^-$; annihilation: $e^+e^- \rightarrow \gamma\gamma$) [27, 34, 35, 503].

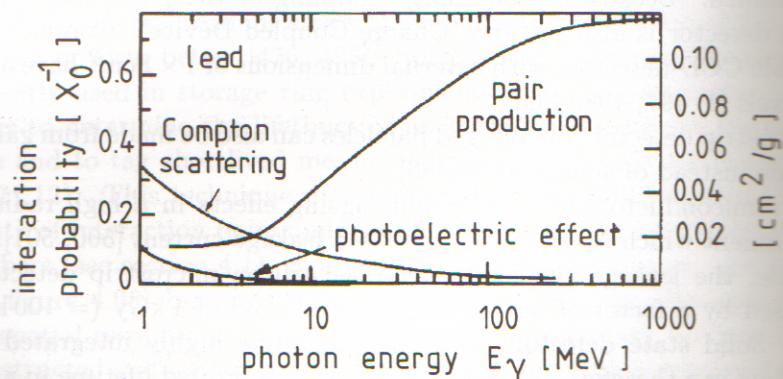


Fig. 7.19. Cross sections for photon interactions in lead as a function of the photon energy [27, 34, 35, 503].

and photons their energy by electron-positron pair production (see figures 7.18 and 7.19, [34, 35]). An electromagnetic cascade is produced. The development of such an electromagnetic shower is sketched in figure 7.20.

The longitudinal and lateral development of electron or photon initiated cascades can be described either with analytical or with Monte Carlo methods. The total track length T , which is the summed length of all individual tracks of charged particles in the shower is proportional to the