Thomson 1.4

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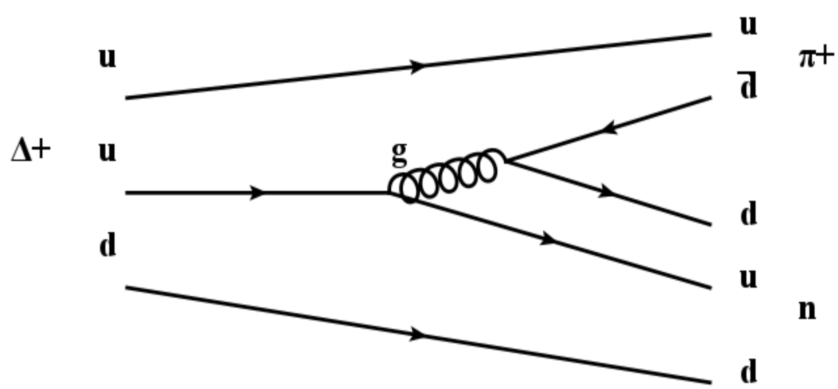
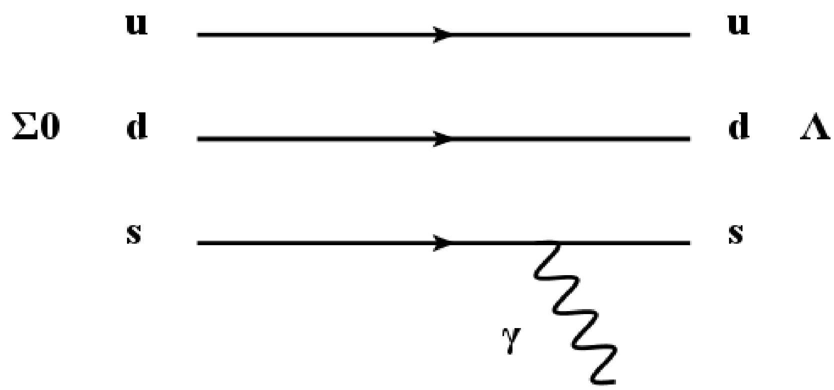
1.4.a

$\Delta^+(uud) \to n(udd)\pi^+(u\bar{d})$



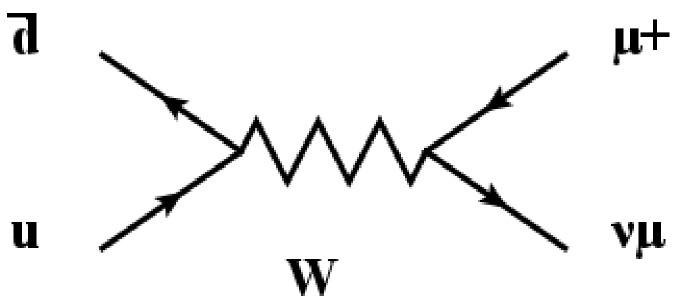
1.4.b

$\Sigma^0(uds) \to \Lambda(uds)\gamma$



1.4.c

$\pi^+(u\bar{d}) \to \mu^+\nu_\mu$



Ordering The rate of the decay of a particle is closely related to the strength of the interaction. The strong interaction is the strongest interaction. The second strongest interaction is the electromagnetic interaction. The third strongest interaction is the weak interaction, and the weakest interaction is gravity, although we don't really know if the graviton exists to facilitate it. The shortest lifetime will be a particle decay through a strong interaction mode which in our case is the decay in part a. The longest living particle in our ensemble will be the pion in part c since it is decaying through the weak interaction mode. The Sigma hadron in part b, which decays through the electromagnetic mode, will have a lifetime somewhere in between the other two particles.