

19. Conservation of energy (see Eq. 38-44) leads to

$$\begin{aligned} K_f &= -\Delta m c^2 + K_i = (m_{\Sigma^-} - m_{\pi^-} - m_n)c^2 + K_i \\ &= 1197.3 \text{ MeV} - 139.6 \text{ MeV} - 939.6 \text{ MeV} + 220 \text{ MeV} \\ &= 338 \text{ MeV} . \end{aligned}$$