FYS3500 - Problem set 5

Spring term 2019

Problem 1   Dark matter – From last years exam

Show that, if there is a process $\chi\chi \to \chi\phi$ by which two cold (very low velocity) dark matter particles χ of mass m_χ annihilate to produce a single χ plus an additional massless dark particle ϕ, the remaining χ has 25% more energy than one of the cold χ's that collided.

Problem 2

Problem 3.4 in M&S

Problem 3

Problem 3.9 in M&S