(7.3) For an irradiation experiment it is necessary to extract a beam of deuterons from an accelerator. The projectile energy is 22 MeV D^+. For this purpose the beam is deflected and permitted to pass through a thin titanium foul (density 4.5 g cm^{-3}). Assuming that $R_1\rho_1 M_1^{-1/2} = R_2\rho_2 M_2^{-1/2}$ (Bragg-Kleman rule), what is the maximum thickness of the foil? Give answer in millimeters.

$R_{Al} := 400$ mg Al/cm^2 $\rho_{Al} := 2.7$ g/cm^2 $\rho_{Ti} := 4.5$ g/cm^2

$M_{Al} := 26.98$ $M_{Ti} := 47.90$

$R_{Ti} := \dfrac{R_{Al}\cdot\rho_{Al}\cdot M_{Al}^{-\frac{1}{2}}}{\rho_{Ti}\cdot M_{Ti}^{-\frac{1}{2}}}$ Application of eqn. (7.12) two times $R_{Ti} = 319.785$ mg Ti/cm^2

$Thickness := \dfrac{R_{Ti}}{\rho_{Ti}}\cdot 10^{-3}\cdot 10$ $Thickness = 0.711$ mm of Ti