

ASTR615 HW#4

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Problem 2

0.1 Mass distribution

We implement in all of our simulations the Kroupa IMF in the form:

$$\phi(m) \propto \begin{cases} m^{-1.3} & (0.08M_{\odot} < m < 0.5M_{\odot}) \\ 0.5 m^{-2.3} & (0.5M_{\odot} < m < 100M_{\odot}) \end{cases} \quad (1)$$

$$m = \begin{cases} -\frac{0.566179}{\sqrt[3]{1.7987-x}(x^3 - 5.39611x^2 + 9.70599x - 5.81939)} & 0 < x < 0.760707 \\ \frac{0.166558}{(1.00024-x)^{10/13}} & 0.760707 < x < 1 \end{cases} \quad (2)$$