Grain size bins

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Abstract

Explains the size bin spacing and number density formulas.

According to `D'Allesio et al., 2001` the dust grain distribution is $n(a) = n_0 a^{-p}$, with p a free parameter. Taking $a_{\min} = 5 \times 10^{-9}\,\mathrm{m}$ and $a_{\max} = 1 \times 10^{-3}\,\mathrm{m}$ and $p = 3.5$. We take grains with radii $a_i = a_0 2^{i/2}$, in bins $i = 1 \ldots 40$. This translates to taking the number density in the ith bin to be

$$n_i = n_0 a_0^{-2.5} 2^{\frac{-10i+7}{8}} (2^{1/4} - 1). \tag{1}$$

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