

$$\frac{\mathrm{d}R_{\mathcal{N}}}{\mathrm{d}E_{\mathrm{R}}} = N_{\mathcal{N}} \frac{\rho_{\odot}}{m_{\chi}} \int_{v_{\mathrm{min}}(E_{\mathrm{R}})}^{v_{\mathrm{esc}}} \mathrm{d}^3v \, |\vec{v}| \, f(\vec{v}) \frac{\mathrm{d}\sigma}{\mathrm{d}E_{\mathrm{R}}}$$