

cooling, growth, & acceleration

Intuitive understanding of the scaling

Implications / differences from Gronke+Oh

Applications

- analytic models
- subgrid models

cold phase growth rate

$$\dot{E}_{\text{cool}} \propto (t_{\text{mix}}/t_{\text{cool}})^{1/4} \text{Mach} \sim \left(\frac{\chi^{1/2} L}{v_{\text{rel}} t_{\text{cool}}} \right)^{1/4} \left(\frac{v_{\text{rel}}}{c_s} \right) \propto \frac{L^{1/4} v_{\text{rel}}^{3/4}}{t_{\text{cool}}^{1/4}}$$

Question:

**For a cold cloud moving in a wind, what actually happens with v_{rel} ?
Once the momentum mixes all the way to the core doesn't v_{rel} start to drop?
Is this decrease in v_{rel} the real reason for the decrease in v_{turb} ?**

In a cloud geometry the amount of mass and momentum contained within a shell decreases as you go in...

What would happen if I start a simulation with less initial cold gas?