

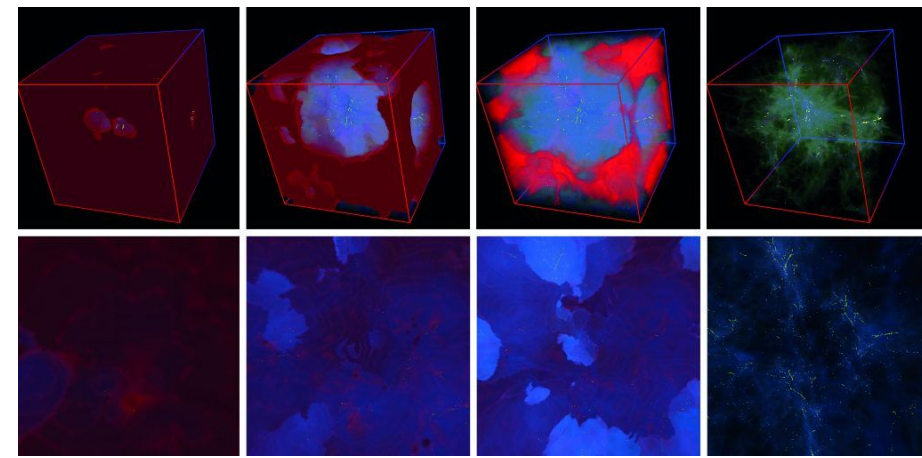
# Do cooling and heating functions actually exist?

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Cosmology from Home 2021 Flash Talk

# Cooling and heating functions



<https://www.scientia.global/dr-nick-gnedin-the-croc-project-understanding-reionisation-in-the-early-universe/>

$$\left. \frac{du}{dt} \right|_{\text{rad}} = n_b^2 [\Gamma(T, \dots) - \Lambda(T, \dots)]$$

- $u$ : energy density of gas ( $\text{erg cm}^{-3}$ )

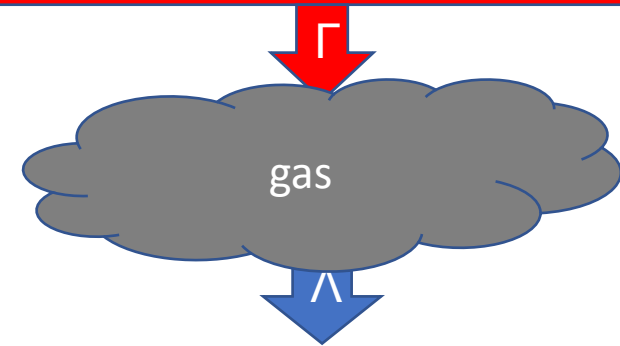
- $n_b$ : baryon number density ( $\text{cm}^{-3}$ )

- $\Gamma$ : gas heating function ( $\text{erg cm}^{-3} \text{ s}^{-1}$ )

- $\Lambda$ : gas cooling function ( $\text{erg cm}^{-3} \text{ s}^{-1}$ )

Gnedin, N. Y., & Hollon, N. 2012, ApJS, 202, 13.  
<https://arxiv.org/abs/1201.5116>

energy sources (e.g. stars, AGN)



energy sinks (e.g. cooling processes)

# How do we describe these for halos?

