

On the IGM heating by low-energy CRs

Carmelo Evoli

Gran Sasso Science Institute, L'Aquila (Italy)

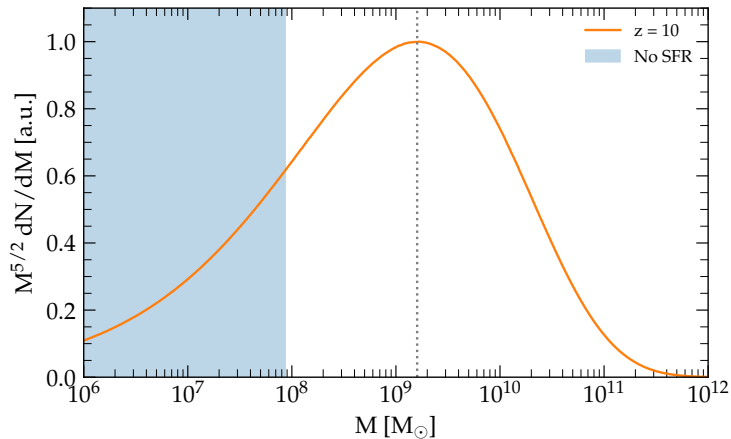
INFN/Laboratori Nazionali del Gran Sasso (LNGS), Assergi (Italy)

Brainstormings

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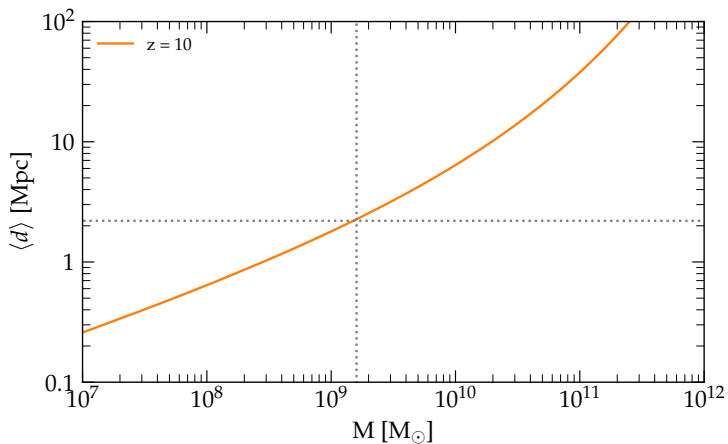


On the SFR as a function of the halo mass



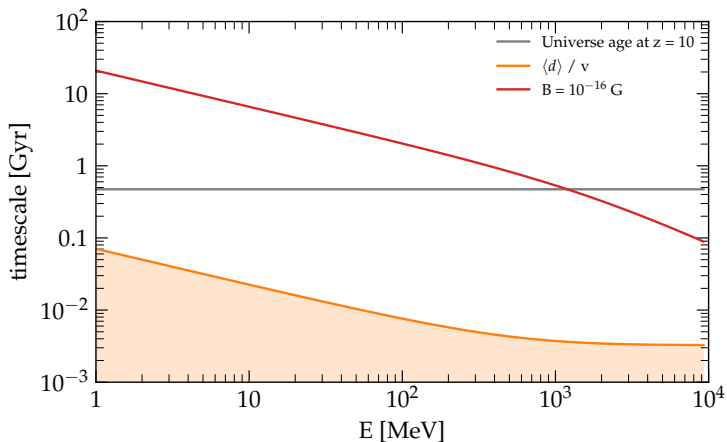
- Assuming $\text{SFR} \propto M_\odot^{3/2}$ and dN/dM computed from an old routine I took somewhere...
- The SFR at $z = 10$ is dominated by $\sim 10^9 M_\odot$ halos

On the average distance among halos



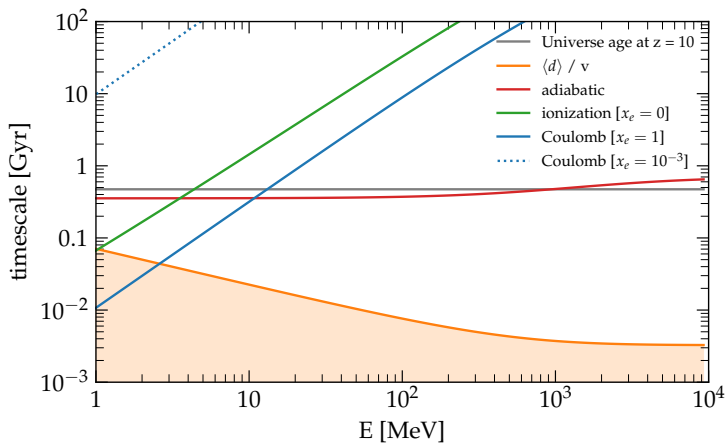
- $\langle d \rangle \sim N^{-1/3}$ where $N \sim M dN/dM$
- For the relevant halos the average distance is ~ 1 Mpc

On the confinement timescale



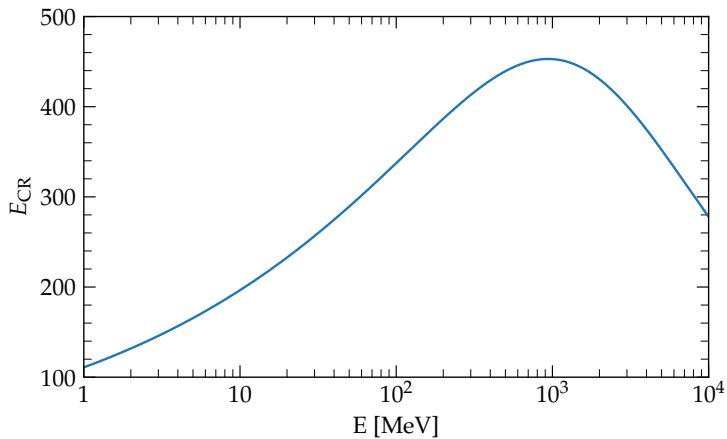
- By reasonable assumptions CRs should move at roughly $\beta(E)c$
- The other (unrealistic) extreme would be Bohm diffusion $D_B \sim r_L c / 3$ which is highly dependent on the magnetic field
- If they move ballistic they can cover the average distance between halos on a timescale much smaller than $H \rightarrow$ uniform

On the confinement timescale



- But they lose energy!
- We do not agree on Coulomb losses (to be checked!)

On the CR spectrum



- Notice most of the injected energy stays between 100 MeV and few GeV's