1 New runs

All runs have $\mu_{50} = 10^6$, $\tilde{\lambda}^{1/2} = 7 \times 10^{11}$, and $\nu = \eta = D = 5 \times 10^{-8}$. Thus, we have

$$v_\lambda = \mu_{50}/\lambda^{1/2} = 1.4 \times 10^{-6}, \quad (1)$$

and

$$v_\mu = \mu_{50}\eta = 5 \times 10^{-2}, \quad (2)$$

corresponding to regime II.

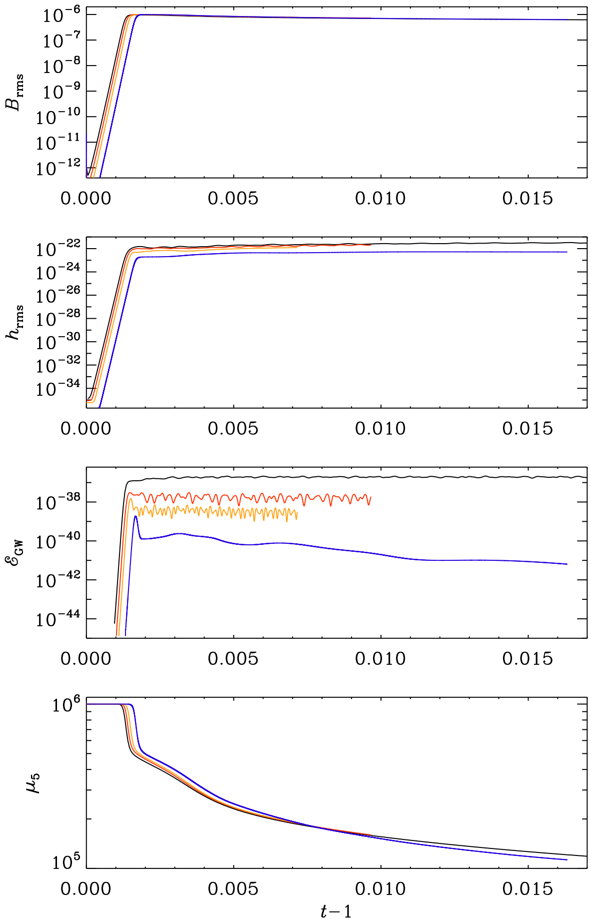

Figure 1: `pcomp_D512_1e5_1e6_49e22_5em8a4`

The difference between the four runs is the minimum wavenumber, k_1, available in the simulations (ideally, it should be $\to 0$). Figure 1 shows the time traces for those runs. They are all reasonably similar, except for $h_{\rm rms}$ and $\mathcal{E}_{\rm GW}^{\rm sat}$, which drop significantly for large k_1.

The chiral chemical potential drops rapidly when the linear phase of the chiral plasma instability is over ($t \approx 1.001$). It then levels off near 10^5, which corresponds to the wavenumber where the magnetic energy spectra peak; see below.

Table 1:

k_1	$\mathcal{E}_{\rm M}^{\max}$	$\mathcal{E}_{\rm GW}^{\rm sat}$	color
5×10^3	4.7×10^{-13}	1.9×10^{-37}	black
10^4	4.9×10^{-13}	1.7×10^{-38}	red
2×10^4	4.9×10^{-13}	3.4×10^{-39}	orange
10^5	5.0×10^{-13}	1.0×10^{-41}	blue

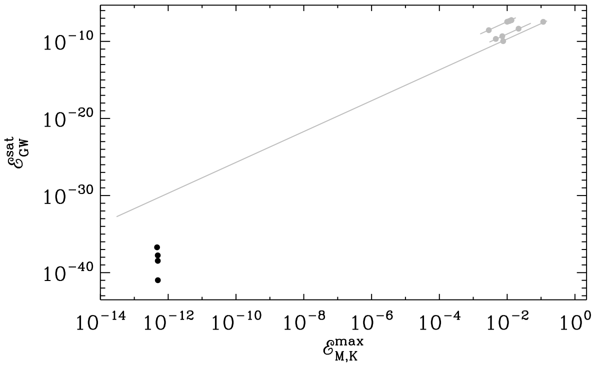

Figure 2: `EEGW_vs_EEKM`

Figure 2 compares $\mathcal{E}_{\rm M}^{\max}$ and $\mathcal{E}_{\rm GW}^{\rm sat}$ with those of earlier runs. The efficiency of GW production is very low.

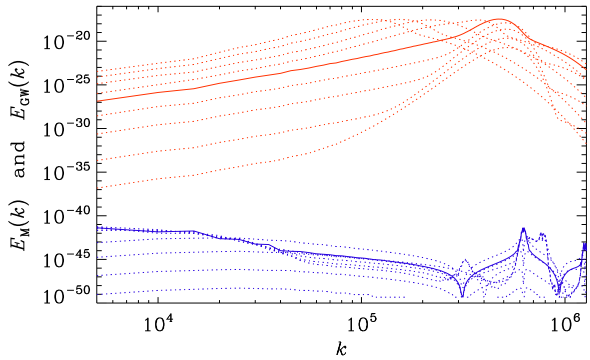

Figure 3: `pspec_sat_D512_1e5_1e6_49e22_5em8a4_k5e3`

Figure 3 compares magnetic and GW energy spectra. As found in our 2021 paper, the GW energy spectra don't capture the lowest wavenumber and therefore the GW energies are not converged.

2 Next?

It would be useful to have a model of how μ_5 builds up.