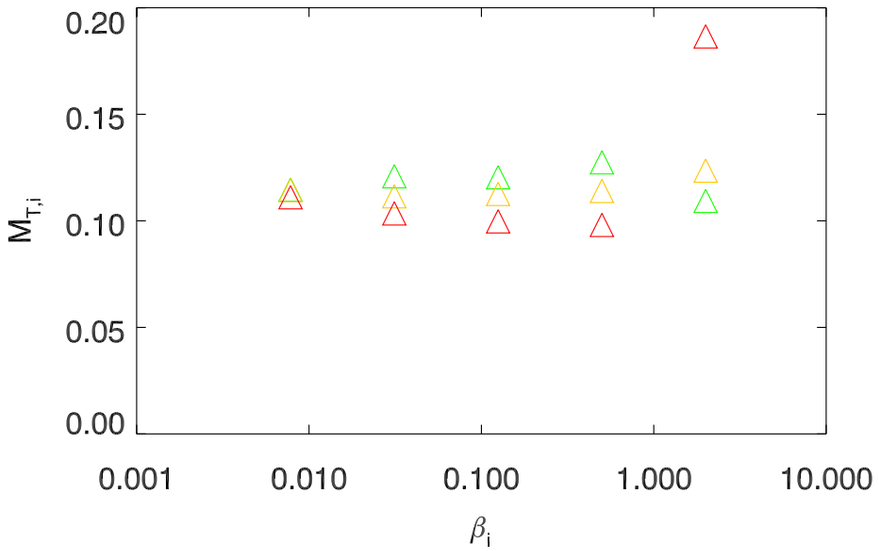
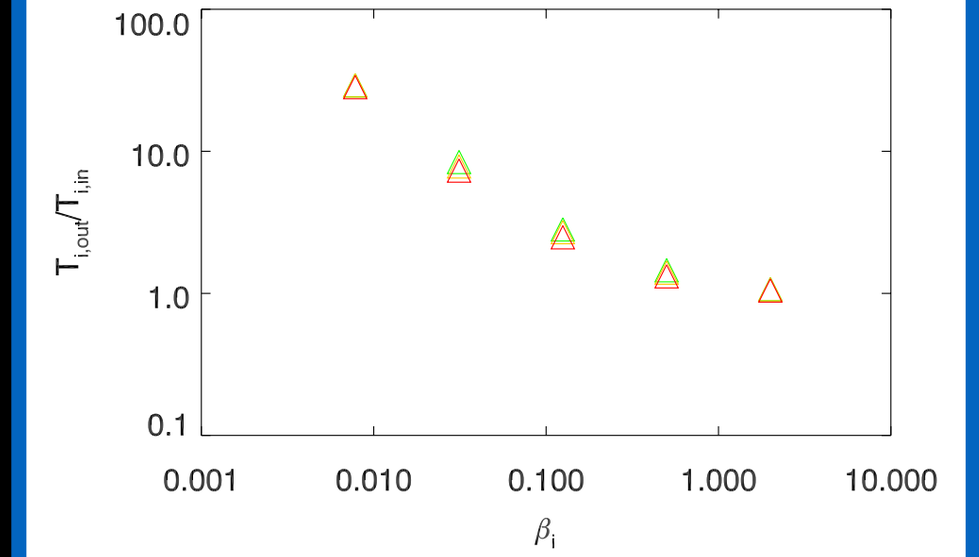
Numerical stability

- The particle granularity gives short-scale fluctuations of the electromagnetic fields, whose mean amplitude scales (Poisson-like) as $\sqrt{n}$, where n is the particle density.
- The fractional contribution of the fluctuations (over the slowly varying fields) scales as $1/\sqrt{n}$.
- This is problematic because the number of super-particles in particle-in-cell codes is ≪ number of real particles.
- We need to control the level of the fluctuations such that they give negligible effects over the timespan of the simulations.

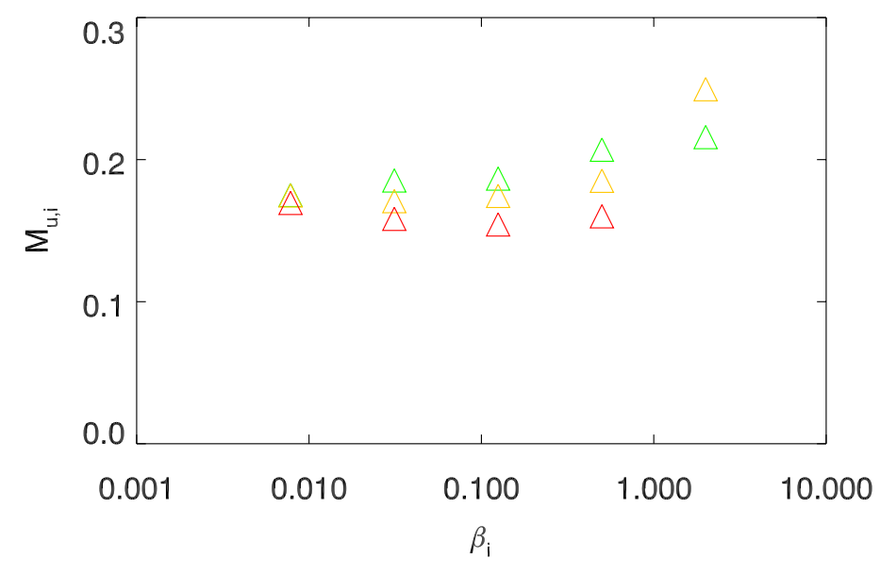
Ion heating I

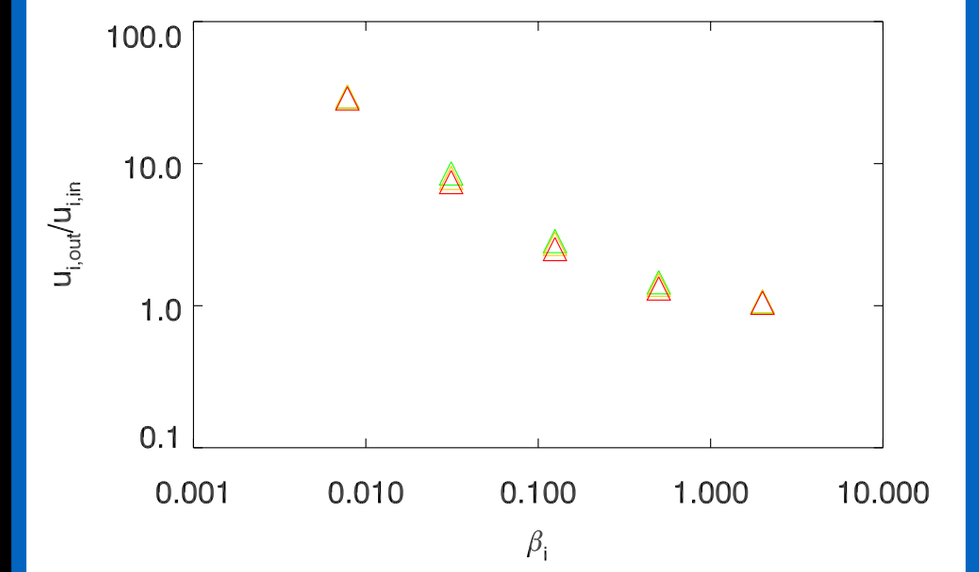
For completeness, here are the corresponding ion plots:





	$T_{e,in}/T_{i,in}$
△	0.1
△	0.3
△	1.0





$$\sigma = 0.1$$
$$m_i/m_e = 25$$
$$ppc = 16; 64$$
$$m_y = 10240$$