

Gyroaveraged kinetic referent model

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M1.1: 1D equations

TO BE INVOICED
IN FY20/21

- Final set of equations

$$\frac{\partial f_i}{\partial t} + v_{\parallel} \frac{\partial f_i}{\partial z} - \frac{e}{m_i} \frac{\partial \phi}{\partial z} \frac{\partial f_i}{\partial v_{\parallel}} = R_{in}(n_i f_n - n_n f_i)$$

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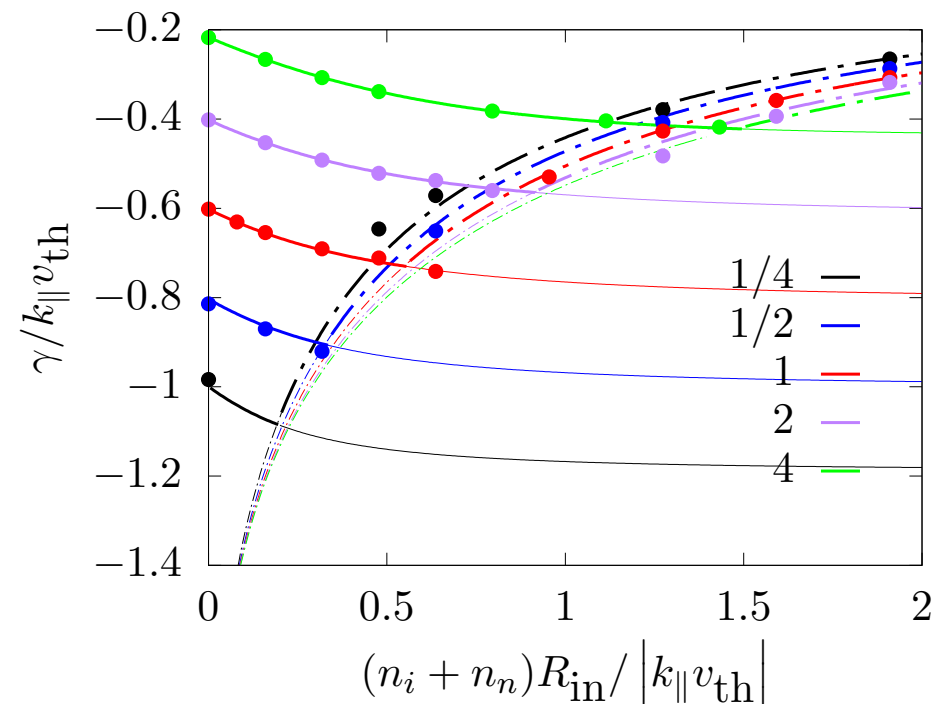
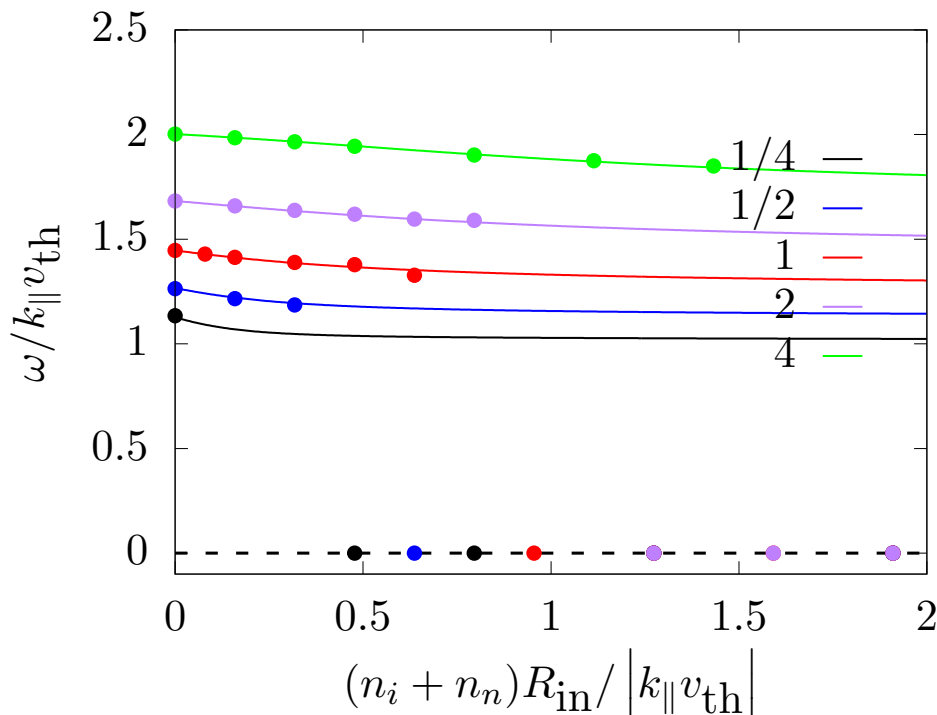
$$\frac{e\phi}{T_e} = \ln \left(\frac{n_i}{N_e} \right)$$

- Deduced moment approach for this system
- Derived linear test to check implementation

M2.1: 1D code with periodic BCs

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- Constructed 1D code
 - Finite differences or Chebyshev polynomials
- Validated code against analytical linear mode



M1.2: Report on plasma edge models

- Written and currently under review
 - Physical regimes of interest in the edge
 - Overview of fluid models
 - List of problems that are known to need kinetic treatment
 - Overview of kinetic codes
 - Discussion of model improvements proposed for this contract and of work to be done

**TO BE DELIVERED AT THE END OF THIS
WEEK AND TO BE INVOICED IN FY20/21**