Dust grain potential calculator

User manual

Dogan Akpinar and George E. B. Doran

1 Setup

- Install the modules specified in *requirements.txt*
- Open *Dust_grain_potential_calculator.py* and edit the base path on line 8

2 Variables

Variable name	Unit	Requirements	Normalised variable name	Normalisation factor	Default value	Variable
Electron temperature (T_e)	K	$T_e > 0$	-	-	-	Yes
Ion temperature (T_i)	K	$T_i \geq 0$	Θ	T_e	-	Yes
Relative ion charge (z)	-	$0 < z \leq z_{max}$ z $\in \mathbb{Z}$	-	-	-	No
Ion mass (m_i)	kg	$m_i > 0$	μ^2	m_e	-	No
Electron number density at infinity (n_0)	m^{-3}	$n_0 > 0$	-	-	-	No
Dust grain radius (a)	m	$a \geq 0$	α	$\lambda_D = \sqrt{\frac{\varepsilon_0 k_B T_e}{n_0 e^2}}$	-	Yes
Flow speed (v)	ms^{-1}	v ≥ 0	υ	$\upsilon_B = \sqrt{\frac{z k_B T_e}{m_i}}$	0	Yes

3 Running the code