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PLASMAKIN –A Python package to handle chemical kinetics in plasma physics modelling

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PLASMAKIN is a package for handling physical and chemical data used in plasma physics modelling and for computing kinetics data from the reactions taking place in the gas or at the surfaces: particle production and loss rates, photon emission rates and energy exchange rates.
It has no limitation on the number of chemical species and reactions that can be handled, is independent of problem dimensions and can be used in both steady-state and time-dependent problems.
A large number of species properties and reaction types are supported, namely: gas or electron temperature dependent collision rate coefficients, vibrational and cascade levels, evaluation of branching ratios, superelastic and other reverse processes, three-body collisions, radiation imprisonment and photoelectric emission.
Non-standard rate coefficient functions can be handled by a user supplied shared library.
PLASMAKIN is based on a shared library with data reading and computational functions and a Python module based on the ctypes foreign function library and providing python function interfaces and classes.
Together with other Python numerical and data plotting libraries such as SciPy and matplotlib, PLASMAKIN allows a fast and efficient analysis of plasma physics problems.

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