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PumpKin: A tool to find principal pathways in plasma chemical models[1] ARAM H. MARKOSYAN, CWI, Amsterdam, The Netherlands, ALEJANDRO LUQUE, FRANCISCO J. GORDILLO VÁZQUEZ, Instituto de Astrofsica de Andaluca (IAA CSIC), Spain, UTE EBERT, CWI, Amsterdam, The Netherlands — Recent kinetic models of atmospheric chemistry or of many industrial processes contain thousands of chemical reactions and species. The reactions depend on timescales, electric fields, temperature, pressure etc. We have developed a software tool called PumpKin (**p**athway red**u**ction **m**ethod for **p**lasma **kin**etic models) to find all principal pathways in such complex plasma chemistry models, i.e. the dominant reaction sequences. PumpKin is a universal tool, inspired by [Lehmann, *J Atmos Chem* **41**, 297 (2002)]. It requires to define and to run once a complete plasma kinetics solver, e.g. ZDPlasKin [http://www.zdplaskin.laplace.univ-tlse.fr], up to the time of interest. The stoichiometric matrix of the system, the reaction rates and the temporal profile of the species densities are the input for PumpKin to systematically identify the principal pathways.

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