HW3 Progress Report

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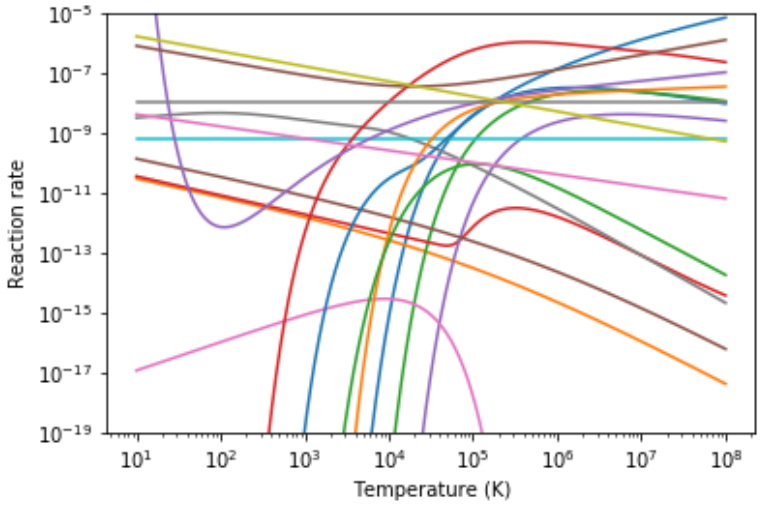
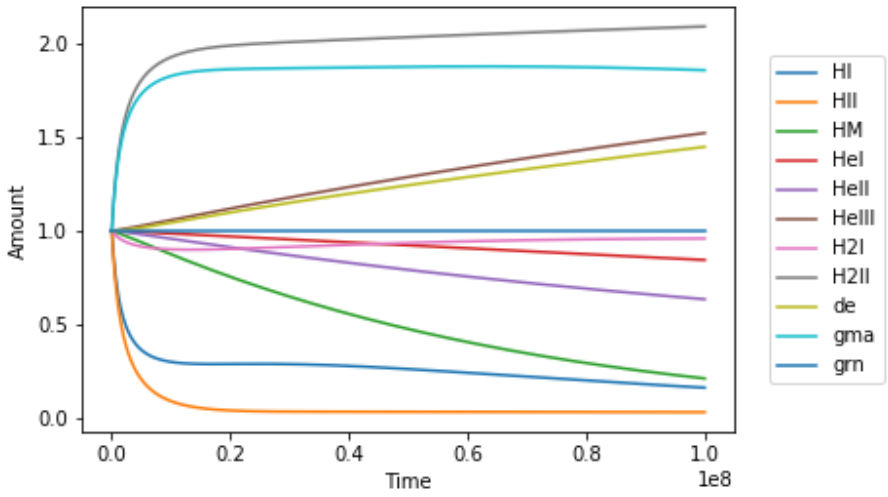
Progress so far:

1. Implemented the reaction equation parsing code, and hard coded most of the reaction rate calculation code. The reaction rates as functions of temperature are in shown in the plot below:



2. Implemented the rough OOP structure. I placed the code into two packages: chemical_evolution and nine_species_network. The integration code, definition of the species and reactions are placed in the chemical_evolution package, whereas nine_species_network contains codes that are specific to the species and reactions at hand (including hard coded equations taken from the Grackle paper).
3. Tested implementation using scipy.integrate.odeint. The evolution of the network over time, in the case where all species have the same initial amount, and the amount of each species is normalized to 1, is shown below:



Todos:

1. Check if the plot above makes sense, and fix potential bugs.
2. Integrate the integration code (currently using scipy.integrate.odeint) into the System class to enhance the OOP organization.
3. Writeup the report.

Something I'm especially proud of:

1. Instead of hard coding the reactions from the paper (which, if I do, I know I will make hard-to-spot typos), I grabbed the \LaTeX source of the paper and parsed the reactions into python code. Whee.