

Generic factory and code refactoring:
A Runge-Kutta-Fehlberg solver
using traits and concepts
(part II)

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Refactoring the RKF solver

Starting from the solution to the previous lab:

1. define a class to handle the input options for the RKF class, provide the corresponding setter method and a method to parse options from a GetPot file;
2. implement the Fehlberg12 and the Dormand-Prince methods (https://en.wikipedia.org/wiki/List_of_Runge%E2%80%93Kutta_methods#Embedded_methods) and use them to solve the Lorenz system (https://en.wikipedia.org/wiki/Lorenz_system). Plot the solution both as a function of time and in the phase space;
3. implement a custom factory for the ButcherArray class, so that the actual method can be polymorphically selected at runtime from the GetPot file;
4. replace your custom-defined factory using the generic factory provided in the generic-factory folder, and provide a proxy for registering all RKF methods implemented.