PhD/Postdoc - project
Flow Maps for Kinetic Plasmas Simulations

Project Description

This project aims to generalize the Characteristic Mapping Method (CMM) for realistic simulations of magnetically confined plasmas in fusion devices (Vlasov-Maxwell and Gyrokinetic). The work will involve the implementation and testing of realistic boundary conditions, the generalization of source term handling for collisions and heating, and the development of robust numerical schemes. Given the high-dimensional nature of the simulations, the implementation will be designed for High-Performance Computing (HPC) environments in `Gyselalib/Gysela-X++`.

Keywords: *Vlasov-Maxwell Equations, Gyrokinetics, High-Performance Computing (HPC), Characteristic Mapping Method, Plasma-Fusion*

Candidate Profile

We seek a candidate with a background in **applied mathematics, computational physics or scientific computing/informatics**.

Required:

- Experience in numerical methods for partial differential equations
- Strong basics in C++ and HPC programming (e.g., GPU programming, job schedulers, Git)

Advantageous:

- Basic knowledge of plasma physics

Contact

For interested candidates, please contact one of the project members:

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