Coupling of MHD and PIC codes for simulations of the Earth's Magnetoshpere.

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We performed multiphysics simulations of the Earth's magnetosphere by coupling magnetohydrodynamic and particle-in-cell solvers.
In our simulations, two-dimensional MHD model of solar wind-magnetosphere interaction was created within the COOLFluiD framework,
a component-based environment for multi-disciplinary research.
Implicit moment particle-in-cell code iPIC3D was used to model the magnetotail region. We have implemented one-way coupling, in which MHD solution provides boundary conditions for the PIC simulation.
Our results suggest that joint PIC-MHD simulations are promising for global magnetospheric modeling.