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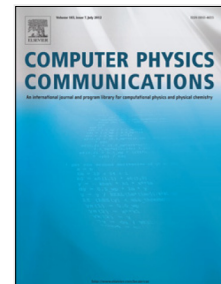
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An Efficient Transport Solver for Tokamak Plasmas *

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Abstract

A simple approach to efficiently solve a coupled set of 1-D diffusion-type transport equations with a stiff transport model for tokamak plasmas is presented based on the 4th order accurate Interpolated Differential Operator scheme along with a nonlinear iteration method derived from a root-finding algorithm. Numerical tests using the Trapped Gyro-Landau-Fluid model show that the presented high order method provides an accurate transport solution using a small number of grid points with robust nonlinear convergence.

Keywords: Plasma simulation, Diffusion equation, Transport, Tokamak

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