Schwarz Time Domain Decomposition with spectral Tchebychev time integration

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This talk focuses on a Schwarz time domain decomposition applied to system of nonlinear ordinary differential equations (ODEs) for initial values problem (IVP) based on the transformation of the original IVP into a boundary values problem (BVP). The method consists of splitting the time interval in time slices and integrating the BVP on each time slice with nonlinear transmission conditions associated with the conservative form of the BVP between the time slices. However, constraints on the size of the time slices appear in the resolution of the BVP. We investigate the use of spectral implicit time integration using a Gauss-Lobatto distribution of time steps over each time slice that allows an implicit adaptation of the size of the time slices involved in the time decomposition. Results obtained on the Lotka-Volterra prey-predator problem will be presented.

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