

# Dynamical Low-Rank Approximation to the Solution of Wave Equations

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joint work with  
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In laser-plasma physics, many phenomena can be described by a nonlinear wave equation coupled to an equation for the plasma response. Since the interesting physical problems are huge, fast and efficient numerical solvers are required. In this talk, we present a dynamical low-rank approximation to the solution of the wave equation. The intend is to reduce the storage requirements by approximating the matrix resulting from a spatial discretization of the solution on a regular grid by a low rank decomposition. We derive a new set of equations for the decomposition. These are solved with a variable step size and variable rank method.

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