

Lab 09

Time-dependent problems. deal.II step-26.

Advanced Topic in Scientific Computing - SISSA, UniTS, 2024-2025

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Assignment

- Read the documentation of `step-26`.

Choose one of the following assignments:

1. Modify `step-26` so to disable local refinement and to utilize explicit Runge-Kutta methods (among the ones available in deal.II) for time integration. Use `step-52` as a reference, specifically examining its `explicit_method`.
2. Parallelize `step-26` using `step-40` as a reference.

In both cases, using the method of manufactured solutions, design an exact solution that satisfies the equations in `step-26`. Compute and visualize the L^2 and H^1 error w.r.to the exact solution at the final timestep for different types of time discretizations (e.g. different values of θ).