
# PRESENTATION

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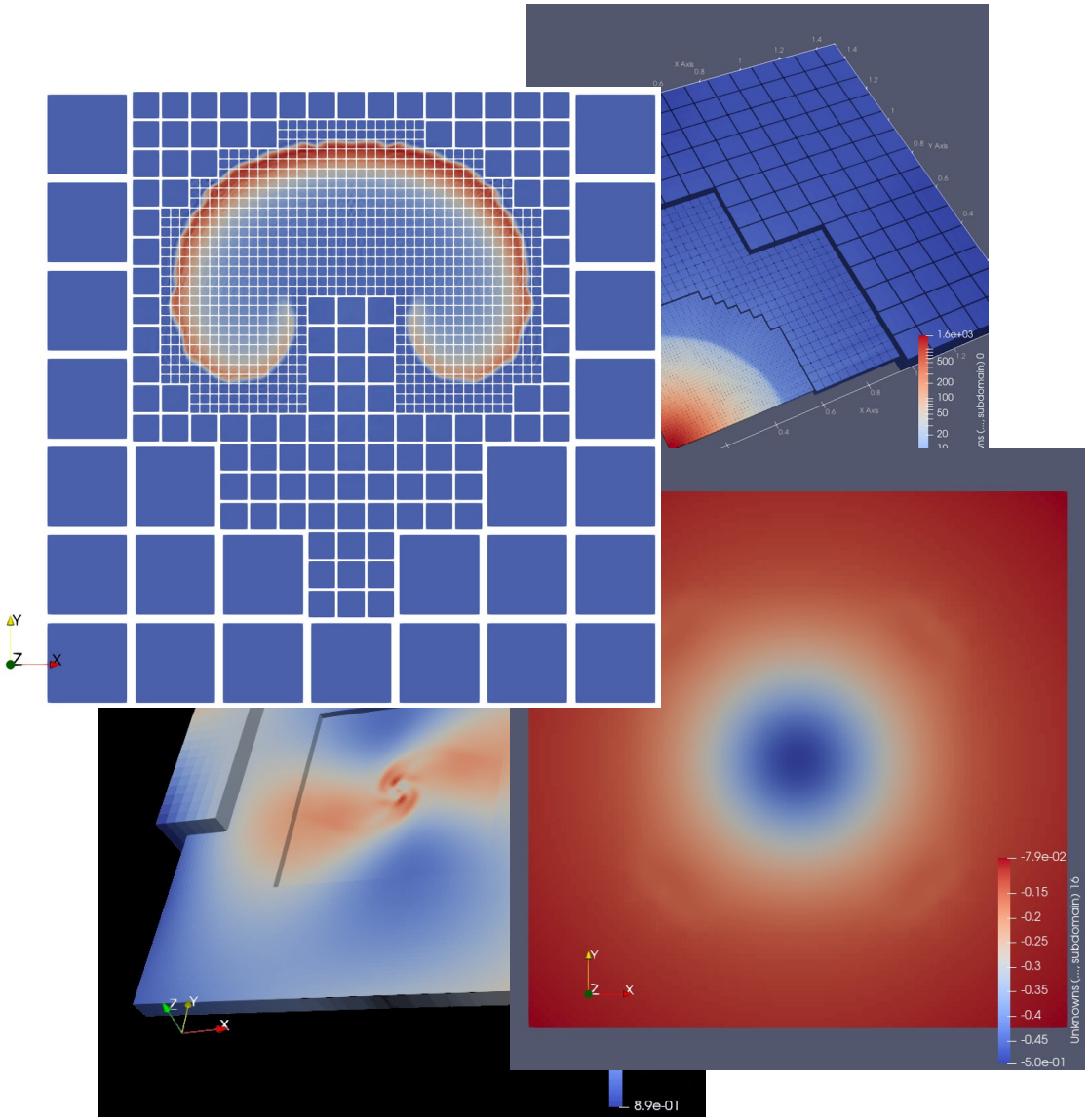
Engineer's House, 11-12 October 2023

Met Office

UKRI UK Research and Innovation

UK Atomic Energy Authority

# Project Motivation: Wave equations



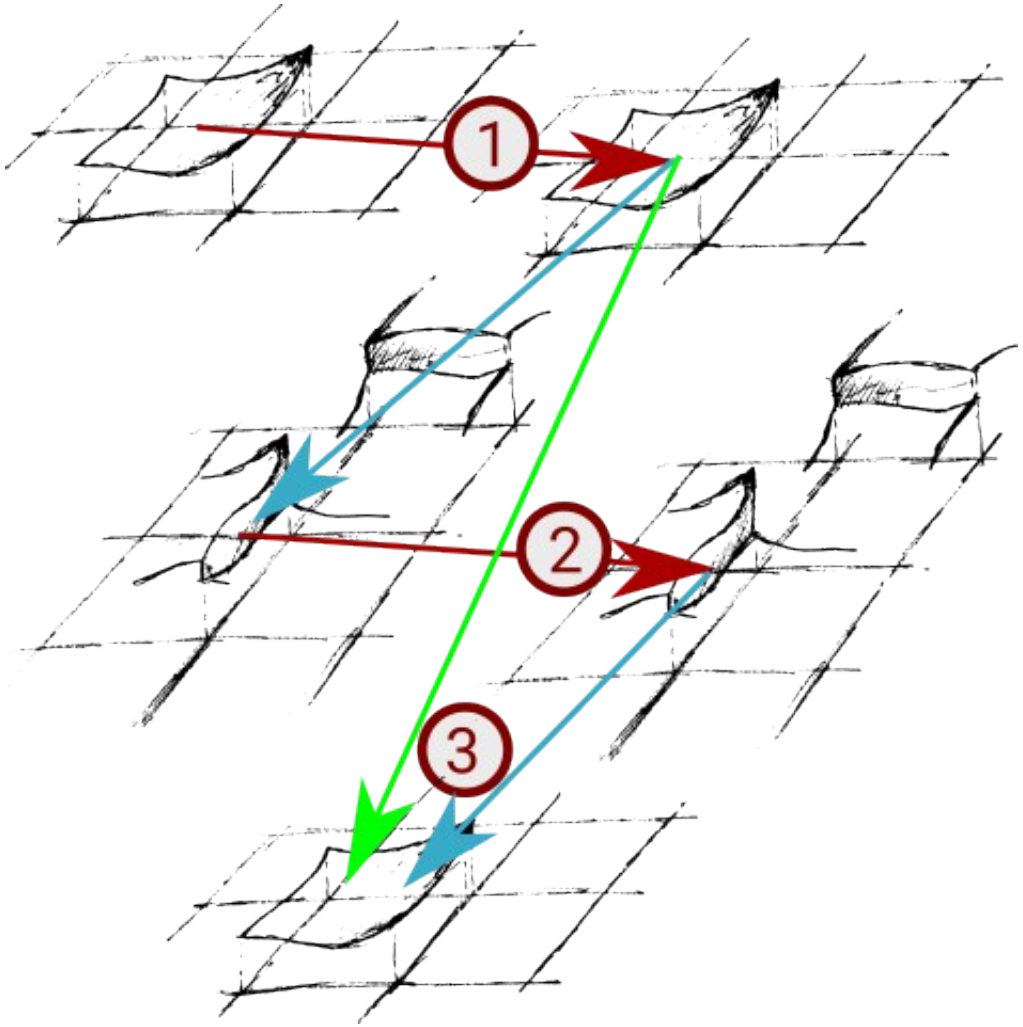

State of the art:
- Higher order in space
- Higher order in time
  (ADER-DG with RKDG as special case)
- Local adaptive time stepping
- Mesh adaptivity

→ Explicit solver (ADER-DG-based)

Non-hyperbolic (=elliptic) terms:
- Constraints (Einstein, pressure)
- Implicit time stepping

→ Coupling challenge

# Project Status




Higher order in space
- Hybridized multigrid
- Currently PETSc-based

Higher order in time
- Studies by Gassner et al
- Embedding into ADER-DG's predictor-corrector
- Hybridization in time?

Local adaptive time stepping
- Algorithms by Rude
- Embedding into ExaHyPE/Peano's FAS
- Analysed tree grammar?

Mesh adaptivity
- Matrix-free with mesh-embedded stencils
- Algorithms by Griebel
- Analysed tree grammar?

→ Toolbox/recipes will be product

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