

Advances in DUNE : Proceedings of the DUNE User Meeting, held in October 6th–8th 2010 in Stuttgart, Germany

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Abstrak

[This book covers recent advances in the development and usage of DUNE. It consists of a collection of 13 articles which mainly evolved from talks given at the First DUNE User Meeting in Stuttgart, Germany, 6.-8.10.2010. The articles nicely illustrate the advanced capabilities and the strong versatility of the DUNE framework. The first part presents extensions of the DUNE core modules, including the construction of local finite element spaces, a discretization toolbox, and two meta-grids, as well as a discussion of performance pitfalls. The second part introduces several external DUNE modules dealing with, e.g., reduced basis methods, unfitted discontinuous Galerkin methods, optimal control problems, and porous media applications. Specific methods and applications are subject of the third part, ranging from two-phase flow in porous media over the implementation of hybrid discontinuous Galerkin and heterogeneous multi-scale methods up to the coupling of DUNE with an existing finite element package.

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