From: Internationale Mathematische Nachrichten, Nr. 218, Dez. 2011
(Newsletter of the Austrian Mathematical Society)

H. Holden, K. H. Karlsen, K.-A. Lie, N. H. Risebro: Splitting Methods for Partial Differential Equations with Rough Solutions. Analysis and MATLAB programs. (EMS Series of Lectures in Mathematics.) EMS, Zürich, 2010, viii+226 S. ISBN 978-3-03719-078-4 P/b € 36,–.

Splitting methods constitute a large family of competitive time integration schemes for time-dependent partial differential equations. The basic idea behind these methods is to split up the right hand side of the (first-order) differential equation into two (or more) parts, to integrate these parts separately and to combine the resulting partial (semi)flows in an appropriate way in order to approximate the true solution. Such a *divide et impera* strategy can have various computational advantages.

The present book studies splitting methods for nonlinear evolution equations with possibly non-smooth solutions. The considered problem class comprises hyperbolic conservation laws and degenerate convection-diffusion problems. A rigorous convergence analysis for splitting methods applied to weakly coupled systems of strongly degenerate convection-diffusion equations is established and applied to various problems. The book further provides a great number of interesting numerical examples. It is highly recommended for people working in the field of evolution equations.

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