

Source Terms

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Seminar Course - Fundamentals of Wave Simulation - Solving Hyperbolic Systems of PDEs

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- 1 From Conservation Laws to Balance Laws
- 2 The Advection-Reaction Equation
- 3 Godunov-Strang splitting
 - The Unsplit Method
 - Godunov Splitting
 - General Formulation
 - Strang Splitting
 - Accuracy
- 4 Implicit Methods and Choice of ODE Solver
- 5 Stiff and Singular Source Terms and the Associated Numerical Difficulties

Our reference equation is

$$q_t + f(q)_x = \psi(q) \quad (1)$$

where

- the homogeneous equation $q_t + f(q)_x = 0$ is **hyperbolic**
- $\psi(q)$ (the **source terms**) don't depend on derivatives of q
 - $\Rightarrow q_t = \psi(q)$ is an independent system of ODEs

