

Bürger, Raimund; Karlsen, Kenneth H.; Mishra, Siddharta; Towers, John D.

On conservation laws with discontinuous flux. (English) [Zbl 1076.76069](#)

Wang, Yongqi (ed.) et al., Trends in applications of mathematics to mechanics. Proceedings of the international symposium, STAMM, Seeheim, Germany, August 22–28, 2004. Aachen: Shaker (ISBN 3-8322-3600-7/pbk). Berichte aus der Mathematik, 75-84 (2005).

The authors consider two different conservation laws with discontinuous flux defined in two adjacent domains: $u_t + f(u)_x = 0$ for $x > 0$, and $u_t + g(u)_x = 0$, for $x < 0$, $t > 0$. Their applications include models of two-phase flow in porous media, traffic flows with discontinuous road surface, and clarifier-thickener models of continuous sedimentation. The main difficulty consists in the formulation of a jump criterion for the solution across the flux discontinuity. The authors introduce the entropy solution concept and present numerical schemes to treat the problem.

For the entire collection see [\[Zbl 1054.74003\]](#).

Reviewer: [Boris V. Loginov \(Ul'yanovsk\)](#)

MSC:

- [76S05](#) Flows in porous media; filtration; seepage
- [76T30](#) Three or more component flows
- [74S30](#) Other numerical methods in solid mechanics (MSC2010)
- [35L65](#) Hyperbolic conservation laws

Cited in **5** Documents

Keywords:

[entropy solution](#); [two-phase flow](#); [porous media](#); [clarifier-thickener models](#)