Identification of shock profile solutions for bidisperse suspensions

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Abstract:
We study a contact manifold emerging in the interior of the phase space of a specific hyperbolic system of two nonlinear conservation laws. The governing equations are modelling bidisperse suspensions, which consist of two types of small particles, differing in size and viscosity, that are dispersed in a viscous fluid. Based on the calculation of characteristic speeds we classify the elementary waves with the origin as left Riemann datum and a general right state in the phase space. In particular, we elaborate the dependence of the solution structure of this Riemann problem on the contact manifold.

References

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[2] S. Berres and P. Castañeda, *Contact manifolds in a hyperbolic system of two nonlinear conservation laws*, http://arxiv.org/abs/1501.06019