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Group Theoretic Methods and Similarity Solutions of the Savage-Hutter Equations

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Abstract

We consider the spatially one-dimensional time dependent system of equations, obtained by Savage and Hutter, which describes the gravity-driven free surface flow of granular avalanches. All similarity solutions of this system are found by means of group analysis. The family of solutions which are invariant to stretching transformations is investigated in greater detail. Explicit solutions are constructed in three cases and their physical interpretation is given. © Springer-Verlag Berlin Heidelberg 2003.
