

Complete blow-up and avalanche formation for a parabolic system with non-simultaneous blow-up

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Abstract

We study the possibility of defining a nontrivial continuation after the blow-up time for a system of two heat equations with a nonlinear coupling at the boundary. It turns out that any possible continuation that verify a maximum principle is identically infinity after the blow-up time, that is, both components blow up completely. We also analyze the propagation of the singularity to the whole space, the avalanche, when blow-up is non-simultaneous.

Collaboration with Fernando Quirós and Julio D. Rossi