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Gradient blowups in multidimensional Burgers-Hopf equation

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The dust equation, also known as homogeneous or pressureless Euler equation (Zel'dovich, 1970), is a toy-model for the fluid dynamic Euler equation in which pressure is neglected. This PDE is the multidimensional analogue of the Burgers-Hopf equation and is a good training ground for the analysis of the catastrophe structures in more than one spatial dimension. In the talk, the gradient blowups for this model are characterized with particular attention to the behavior of the vorticity and the effects of external fields.

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