Nontrivial compact blow-up sets of lower dimension in a half-space

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Resumen

In this talk we provide examples of blowing up solutions to parabolic problems in a half space, \( \mathbb{R}^N_+ \times \mathbb{R}^M = \{ x_N > 0 \} \times \mathbb{R}^M \), with nontrivial blow-up sets of dimension strictly smaller than the space dimension. To this end we prove existence of a nontrivial compactly supported solution to

\[
\nabla (|\nabla \varphi|^{p-2} \nabla \varphi) = \varphi \text{ in the half space } \mathbb{R}^N_+ = \{ x_N > 0 \},
\]

with the nonlinear boundary condition

\[
-|\nabla \varphi|^{p-2} \frac{\partial \varphi}{\partial x_N} = \varphi^{p-1} \text{ on } \partial \mathbb{R}^N_+ = \{ x_N = 0 \}.
\]

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References


