A blow-up phenomenon in the Hamilton-Jacobi equation in an unbounded domain. (English summary)


Summary: “We construct an example of blow-up in a flow of min-plus linear operators arising as solution operators for the Hamilton-Jacobi equation

$$\frac{\partial S}{\partial t} + \frac{|\Delta S|^{\alpha}}{\alpha} + U(x, t) = 0,$$

where $\alpha > 1$ and the potential $U(x, t)$ is uniformly bounded together with its gradient. The construction is based on the fact that, for a suitable potential defined on a time interval of length $T$, the absolute value of velocity for a Lagrangian minimizer can be as large as $O((\log T)^{2-2/\alpha})$. We also show that this growth estimate cannot be improved. Implications of this example for existence of global generalised solutions to randomly forced Hamilton-Jacobi or Burger equations are discussed.”

{For the collection containing this paper see MR2145152}

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References

10. Vassili N. Kolokoltsov and Victor P. Maslov, Idempotent analysis and its appli-


Note: This list reflects references listed in the original paper as accurately as possible with no attempt to correct errors.