

Blow-up Dynamics and Orbital Stability for Inhomogeneous Dispersive Equations

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Propositions

accompanying the dissertation

Blow-up Dynamics and Orbital Stability for Inhomogeneous Dispersive Equations

by

Elek Csobo

1. To prove a crucial compactness result for inhomogeneous equations, one often needs to show that the infimum of the inhomogeneous problem is strictly smaller than the infimum of the homogeneous problem.
2. Linear instability of ground states almost always implies orbital instability.
3. Orbital stability of ground states always implies global well-posedness for initial conditions in the neighborhood of the ground state.
4. When the linearized operator $L''_{\omega}(\Phi_{\omega}) = E''(\Phi_{\omega}) + \omega Q''(\Phi_{\omega})$ around the standing wave solution has two negative eigenvalues, then the slope condition $\frac{\partial}{\partial \omega} Q(\Phi_{\omega}) < 0$ implies orbital instability in $H^1_{\text{rad}}(\mathbb{R})$.
5. In order to be fit for purpose, the Graduate School should provide training in transferable skills which are specifically tailored to the needs of Ph.D. candidates in mathematics.
6. An essential skill that a researcher needs to develop is the ability to ask the right questions. A good question is sometimes more valuable than a good answer.
7. The value of sports is often underestimated by scientists.
8. One of the main causes of war is the desire for profit of arms manufacturers.
9. If we respected the rights of children, we should educate them to give them the knowledge and the mental habits to form independent opinions. Education as a political means could not exist if we respected the rights of children.
10. The importance of a broader development outside the scope of one's own research field is underestimated by most Ph.D. candidates.

These propositions are regarded as opposable and defensible, and have been approved as such by the promoters prof. dr. J.M.A.M van Neerven and dr. S. Le Coz.