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Asymptotic stability of KdV solitons on the half-line
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Resumo: In this talk I will discuss the asymptotic stability problem for KdV solitons on right half-line. Unlike standard KdV, these are not exact solutions to the equations posed on the half-line, and, contrary to NLS, no exact soliton solution seems to exist. In a previous result, we showed that solitons of the KdV equation posed in the entire line, placed sufficiently far from the origin, are stable in the half-line energy space, and assuming homogeneous boundary conditions. Now, we confirm these half-line KdV solitons are indeed asymptotically stable in the energy space. For the proof we follow in spirit the ideas by Martel and Merle, with some important differences coming from the fact that mass and energy are not conserved by the dynamics of the half-line KdV, and high regularity boundary terms modify the dynamics in the long time regime. Additionally, some bad behavior of the KdV soliton for the entire line must be cut off in order to ensure the correct convergence of the dynamics to a unique final state. This is a joint work with Claudio Muñoz (Universidad de Chile).

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