

Asymptotic Analysis of the Interaction Between a Soliton and a Regular Gas of Solitons (a.k.a. Gulliver and the Lilliputians)

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We analyze the case of a (dense) mKdV soliton gas and its large time behaviour in the presence of a single tracer soliton. The solution, which can be expressed in terms of Fredholm determinants, can be decomposed as the sum of the background gas solution (an elliptic wave), plus a soliton solution: the individual expressions are however quite convoluted due to the interaction dynamics. Additionally, we are able to derive the kinetic velocity equations and the local phase shift of the gas after the passage of the soliton, and we can trace the location of the soliton peak as the dynamics evolves.

This is a joint work with T. Grava (SISSA, Bristol), R. Jenkins (UCF), K. McLaughlin (CSU) and A. Minakov (U. Karlova).

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