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Gustavo Ponce* (ponce@math.ucsb.edu), Departemnt of Mathematics, University of California-Santa Barbara, Santa Barbara, CA 93106, and **Claudio Munoz** (claumuno@gmail.com). *Breathers and the dynamics of solutions in KdV type equations.*

In this paper our first aim is to identify a large class of non-linear functions $f(\cdot)$ for which the IVP for the generalized Korteweg-de Vries equation does not have breathers or “small” breathers solutions. Also we prove that all uniformly in time $L^1 \cap H^1$ bounded solutions to KdV and related “small” perturbations must converge to zero, as time goes to infinity, locally in an increasing-in-time region of space of order $t^{1/2}$ around any compact set in space. This set is included in the linearly dominated dispersive region $x \ll t$. Moreover, we prove this result independently of the well-known supercritical character of KdV scattering. In particular, no standing breather-like nor solitary wave structures exists in this particular regime. (Received August 16, 2018)