1022-35-106   **Andrew Comech*** (`comech@math.tamu.edu`), Mathematics Department, Texas A&M University, College Station, TX 77843-3368, and **Scipio Cuccagna** and **Dmitry Pelinovsky**. *Nonlinear instability of a critical traveling wave in the generalized Korteweg – de Vries equation.*

We prove the instability of a "critical" solitary wave of the generalized Korteweg – de Vries equation, the one with the speed at the border between the stability and instability regions. The instability is "purely nonlinear", in the sense that the linearization at a critical soliton does not have eigenvalues with positive real part. Essentially, the instability is caused by higher algebraic degeneracy of the zero eigenvalue in the spectrum of the linearized system. We prove that critical solitons correspond generally to the saddle-node bifurcation of two branches of solitons. (Received September 11, 2006)