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J. Douglas Wright*, Univesity of Minnesota, School of Mathematics, 127 Vincent Hall, 206 Church St. SE, Minneapolis, MN 55455, and **Arnd Scheel**. *Existence and linear stability of solitary waves in coupled KdV equations.*

We consider a system of coupled equations of KdV type which is a model for interactions of long waves, for example in a stratified fluid. We are interested in the existence and linear stability of solitary waves for the system. Previous studies in this direction have relied primarily on the fact that solitary waves for this system are minimizers of an energy functional under a certain constraint. We prove the existence of a variety of solitary waves several of which are not constrained minimizers using perturbative means. We also compute the spectra of the linearizations about these solutions. We discover that the phenomenon known as "leapfrogging" (that is, a solution which looks like a solitary wave in each component which oscillate about a shared center of mass) is linked to an oscillatory instability in the problem. (Received January 12, 2006)