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John Carter* (carterj1@seattleu.edu), Seattle University, 901 12th Ave, Seattle, WA 98122, and **Rodrigo Cienfuegos** (racienfu@ing.puc.cl), Departamento Ingenieria Hidraulica y Ambi, Pontificia Universidad Catolica de Chile, Santiago, Chile. *Kinematics & Stability of Solutions to the Serre Equations.*

The Serre equations are a pair of strongly nonlinear, weakly dispersive, Boussinesq-type partial differential equations. They model the evolution of the surface elevation and the depth-averaged horizontal velocity of an inviscid, irrotational, incompressible, shallow fluid. They admit a three-parameter family of cnoidal wave solutions with improved kinematics when compared to KdV theory. We examine their linear stability and establish that waves with sufficiently small amplitude/steepness are stable while waves with sufficiently large amplitude/steepness are unstable. (Received August 30, 2011)