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1003-33-641 **Bao-Feng Feng*** (feng@panam.edu), 1201 W. University Dr., Edinburg, TX 78541. *Stable cnoidal waves in a coupled Kuramoto-Sivashinsky-Korteweg-de Vries equation.*

Cnoidal waves as well as their stability are investigated in a system composed of a Kuramoto - Sivashinsky – Korteweg - de Vries (KS-KdV) equation linearly coupled to an extra linear dissipative one. The model describes, e.g., a two-layer liquid film flowing down an inclined plane. We demonstrate that a perturbation analysis, based on the balance equation for the net field momentum, predicts the existence of stable cnoidal waves (CnWs) in the same system. It is found that the mean value u_0 of the wave field u in the main subsystem, but *not* the mean value of the extra field, affects the stability of the periodic waves. Three different areas can be distinguished inside the stability region in the parameter plane (L, u_0) , where L is the wave's period. In these areas, stable are, respectively, CnWs with positive velocity, constant solutions, and CnWs with negative velocity. Multistability, i.e., the coexistence of several attractors, including the waves with several maxima per period, appears at large value of L . The analytical predictions are completely confirmed by direct simulations. Stable waves are also found numerically in the limit of vanishing dispersion, when the KS-KdV equation goes over into the KS one. (Received September 25, 2004)