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Experimental study of solitary waves in a two-dimensional complex plasma T.E. SHERIDAN, Dept. of Physics, Ohio Northern University — The propagation of large-amplitude non-linear waves has been studied in a twodimensional strongly-coupled complex (dusty) plasma. A system with ≈ 5000 particles (8 μ m diam.) was created for a neutral argon pressure of 3.0 mtorr. The Debye shielding parameter was found to be $\kappa \approx 1.6$. Highly-nonlinear, planar compressive waves were launched by pushing all the particles in a rectangular region at the center of the crystal in the same direction using a high-power green laser. Solitary waves were found to propagate in the forward direction at Mach numbers up to 1.4. Oscillatory shocks were seen to propagate in the backward direction after the laser was turned off. Coherent rarefactive pulses were not observed.

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