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**Simulation of solitons in two-dimensional complex plasma** M.J. GAREE, T.E. SHERIDAN, Physics and Astronomy, Ohio Northern University — We have developed a one-dimensional simulation for longitudinal waves propagating in a two-dimensional hexagonal lattice of particles interacting through a shielded Coulomb potential (i.e., a Yukawa or Debye–Hückel potential) with Debye length $\lambda$. Dispersion relations were computed for various values of the Debye shielding parameter $\kappa = a/\lambda$, where $a$ is the lattice constant. The acoustic speed computed from the simulation is in excellent agreement with theory. The evolution of localized Gaussian velocity perturbations has been studied. We find that compressive pulses steepen and form solitons. Rarefactive pulses do not form solitons, but rather evolve into wave trains.

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