Abstract Submitted for the OSS06 Meeting of The American Physical Society

Emergence of continuum behavior in a finite two-dimensional complex plasma T.E. SHERIDAN, Ohio Northern University — Two-dimensional complex plasma experiments are often performed in systems having a few thousand particles, yet the results are found to agree with the predictions of continuum theory. We consider a model where the the complex plasma consists of n particles interacting through a shielded Coulomb potential and confined by a parabolic potential well. The breathing frequency for this system can be found exactly in the continuum limit. The cluster radius and breathing frequency will be computed as a function of increasing particle number up to n = 3200 for values of the Debye shielding parameter $\kappa = 0$ to 5 and compared to results from continuum theory and a modified continuum theory that includes some effects of finite nearest-neighbor distance.

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Date submitted: 28 Feb 2006

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