

Abstract Submitted
for the DAMOP08 Meeting of
The American Physical Society

Searching for allotropes of Wigner crystal clusters with Genetic Algorithm MATT KALINSKI, Utah State University — We have recently discovered the configuration existence theorem for N electrons in magnetic and circularly polarized fields stating that the maximum number of configurations may be the product of all differential foldings [1] (maximum number of times the ZVS gradient manifold is cut by even lower dimensional arbitrary plane to disjoint sets): There may be for example at least $2^{180} = 1532495540865888858358347027150309183618739122183602176$ maximum number of configurations of electrons corresponding to the complexity of carbon C60 ($N=60$) assuming the lowest nontrivial folding 2 (parabola-like). We use therefore genetic algorithm to find possible classical Wigner crystal allotropes leading quantum configurations for large number of electrons. We find several distinct configurations for large number of electrons. The genetic operations on configuration species are also discussed. [1] M. Kalinski, L. Hansen, and D. Farrelly, Phys. Rev. Lett. **95**, 103001 (2005).

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Date submitted: 28 Jan 2008

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