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Cold Fermionic Atoms in Two Dimensional Traps–Pairing versus Hund's Rule[1] STEPHANIE REIMANN, Lund University, MASSIMO RONTANI, Modena University, JEREMY ARMSTRONG, Lund University, YONGLE YU, SVEN ÅBERG, Lund University — The microscopic properties of a finite many-body system of few interacting cold fermionic atoms confined in a two-dimensional (2D) harmonic trap are studied by numerical diagonalization. For repulsive interactions, a strong shell structure dominates with Hund's Rule acting in its extreme for mid-shell configurations. In the attractive case, odd/even oscillations due to pairing occur simultaneously with deformations in the internal structure of the ground states, as seen from pair correlation functions.

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