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Three-bosons in 2D with a magnetic field SETH RITTENHOUSE, Department of Physics, The United States Naval Academy, ANDREW WRAY, BRAD JOHNSON, Department of Physics and Astronomy, Western Washington University — Systems of interacting particles in reduced dimensions in the presence of external fields can exhibit a number of surprising behaviors, for instance the emergence of the fractional quantum Hall effect. Examining few-body interactions and effects can lead to significant insights within these systems. In this talk we examine a system of three bosons confined to two dimensions in the presence of a perpendicular magnetic field within the framework of the adiabatic hyperspherical method. For the case of zero-range, regularized pseudo-potential interactions, we find that the system is nearly separable in hyperspherical coordinates and that, away from a set of narrow avoided crossings, the full energy eigenspectrum as a function of the 2D s-wave scattering length is well described by ignoring coupling between adiabatic hyperradial potentials. In the case of weak attractive or repulsive interactions, we find the lowest three-body energy states exhibit even/odd parity oscillations as a function of total internal 2D angular momentum and that for weak repulsive interactions, the universal lowest energy interacting state has an internal angular momentum of $M = 3$.

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