

THE CONDITIONS OF STABILITY
OF TWO-DIMENSIONAL QUANTUM
SYSTEMS OF THREE CHARGED PARTICLES

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S u m m a r y

For a two-dimensional Coulomb system of three charged particles, among which two particles are identical and the third particle is of different nature, we study the conditions of existence for symmetric and antisymmetric bound energy states (conditions of stability) in the mass-charge (m, Z) plane. High-precision three-body numerical calculations based on a stochastic variational method with Gaussian bases are performed. Several anomalous effects in the behavior of the characteristic distances between particles are revealed, and the nonzero quadrupole moment is found in a two-dimensional polar-symmetric field. The systematic comparison of the results for two- and three-dimensional systems is performed. The values of energy and size, the density distributions, and the correlation functions for the various reference three-particle systems are obtained.