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Title: Fragmentation and correlations of interacting ultracold multicomponent bosons

Abstract: In this talk, I will discuss highly accurate solutions of the many-body Schrödinger equation for interacting ultracold bosonic particles with internal degrees of freedom obtained with the multiconfigurational time-dependent Hartree for bosons method. For the groundstate of $N=100$ parabolically confined bosons with two internal states, fragmentation emerges as a function of the separation between the state-dependent minima of the two parabolic potentials: for small separations, the bosons occupy only one single-particle state while for larger separations, two single-particle states contribute macroscopically. The coherence of the system is maintained within each internal state of the atoms. Between the different internal states, however, correlations are built up and the coherence is lost for larger separations. This is a hallmark of a new kind of fragmentation -- "composite fragmentation" — which is absent in bosons without internal structure.