

Bell states with three component strongly interacting few-atom systems

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We discuss the complete ground-state phase diagram for a one-dimensional ultracold few-atom triple mixture of interacting bosons trapped harmonically as the different coupling constant strengths range from zero to strong repulsive interactions. These results show that there are new appealing ground-state phases with various correlations, coherence and spatial localization stemming from strongly repulsive interactions. We pay particular attention to the regime in which atomic Bell states can be found and manipulated. We discuss their interest as a system valid to implement quantum gates experimentally.

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Clasificación de la sesión : Session 1