Searching for multi-boson effects via Bose-Einstein interferometry

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Abstract

In event ensembles with arbitrary multiplicity distribution, multi-boson symmetrization effects can lead to so far overlooked residual correlations in the two-particle correlation function which in general require a modified framework for extracting information on the source geometry. In sources with high phase-space density, these residual correlations change the shape of the correlation function and affect the intercept parameter. Their analysis clarifies a number of previously reported puzzling multi-boson symmetrization phenomena. At high phase-space density, Bose condensation sets in but no "pion laser" is generated. By looking for the predicted shape change of the correlation function in event ensembles with (approximately) fixed multiplicity one can search, in a model-independent way, for multi-boson symmetrization effects.