

Mathematical Physics

Anyons and the deformed Calogero-Sutherland model

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In this talk I discuss the collective field theory description of the celebrated Calogero-Sutherland (CS) model, based on conformal field theory, and its relation to quasi-particles known as anyons. I show that previously known results, in this context, naturally generalize to the deformed CS model that was introduced by Chalykh, Feigin, Veselov, and Sergeev.

The deformed CS model is a quantum integrable model with arbitrary numbers of two (different) types of strongly interacting particles and is a natural mathematical generalization of the CS model. Contrary to the CS model, there is no satisfactory interpretation of the deformed CS model as a quantum many-body system. As will be discussed, our results provide a natural application of the deformed CS model in Wen's effective field theory of the fractional quantum Hall effect, where the different particles corresponds to electron and quasi-hole excitations.

The talk is based on joint work with E. Langmann (KTH).