Contribution ID: **39**                                          Type: **Contributed Talk**

# Discrete scale-invariant boson-fermion duality in one dimension

*Monday, 31 July 2023 16:00 (15 minutes)*

In this talk, I discuss discrete scale invariance in one-dimensional many-body problems of identical particles. I first classify all possible scale-invariant two-body contact interactions that respect unitarity, Galilean invariance, permutation invariance, and translation invariance in one dimension. By using these contact interactions, I then construct models of $n(\geq 3)$ identical particles that exhibit breakdown of continuous scale invariance to discrete scale invariance. Just as in the Efimov effect, these models enjoy a geometric sequence of $n$-body bound states and log-periodicity of $n$-body S-matrix elements for arbitrary $n \geq 3$. I also discuss that these results can be applied equally well to both bosons and fermions by using boson-fermion duality. This talk is based on the paper [1].

[1] S. Ohya, Phys. Rev. A 105 (2022) 033312, arXiv:2110.09723 [quant-ph].

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**Session Classification:**   Monday Parallel Session: Unitary/Boson Systems (AudiMax)