Algebraic Origins of Reflectionless Scattering in Bogoliubov-de Gennes equations for a solitonic BEC[1] ANDREW KOLLER, MAXIM OLSHANII, University of Massachusetts Boston — We consider small excitations around a one-dimensional bosonic soliton. It is well known that the corresponding Bogoliubov-de Gennes (BdG) Liouvillian features a vanishing reflection coefficient at all energies.[2,3] In this presentation, we show that this reflectionless property can be explained via an algebraic link (related to quantum-mechanical supersymmetry) to a potential-free Liouvillian.

[2]D. J. Kaup, J. Phys. A **42**, 5689 (1990).
[3]Y. Castin, Eur. Phys. J. B **68**, 317 (2009).

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