Contribution ID: **4** Type: **Non-Invited Talk**

Symmetry properties of non-Hermitian, PT-symmetric quantum field theories

Thursday 29 November 2018 14:00 (25 minutes)

We describe recent progress in understanding the symmetry properties of non-Hermitian, PT-symmetric quantum field theories. We start by revisiting the derivation of Noether's theorem, showing that the conserved currents of non-Hermitian theories correspond to transformations that do not leave the Lagrangian invariant. The associated symmetry transformations instead yield families of equivalent PT-symmetric theories. These results are illustrated by means of two concrete examples: a theory of one complex scalar and one complex pseudo-scalar, and a non-Hermitian extension of quantum electrodynamics. After describing the construction of the path integral for non-Hermitian but PT-symmetric Lagrangians, we finish by considering the spontaneous breakdown of both global and local symmetries, and describe how the Goldstone theorem and Englert-Brout-Higgs mechanism are borne out.

Content of the contribution

Theory

Author: Dr MILLINGTON, Peter (University of Nottingham)

Presenter: Dr MILLINGTON, Peter (University of Nottingham)

Session Classification: PT symmetric Hamiltonians

Track Classification: [9] PT symmetric Hamiltonians