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Vito Pellizani (UNIBE) - Conformal algebra automorphism: from theory to experiment

Wednesday, 12 January 2022 09:00 (25 minutes)

Conformal field theories (CFTs) are usually strongly coupled, which means that standard quantum field theory techniques fail. At the same time, conformal symmetry is such a strong constraint that any observable can derived from a set of simple building blocks, the so-called CFT data. On top of that, the conformal algebra has an automorphism which identifies the Hamiltonian on R x Sˆ{d-1} with the dilatation operator on Rˆd, whose eigenvalues are part of the CFT data of the theory. The task of collecting these eigenvalues thus reduces to the computation of energy levels on the cylinder. In this talk, I will carefully review this correspondence and its nonrelativistic avatar which, totally unexpectedly, provides an exact connection with ultracold atom experiments! In order to illustrate the power of this technique, I will discuss the case of conformal theories with global symmetries.

Session Classification: Short talks