

Universality in many-body systems

Systems that share common proprieties as critical exponents and the number and nature of quantum states are said to belong to the same universality class. However, systems in the same class may have very different typical sizes and energies. For example, some nuclear systems, cold atoms, and hadronic molecules can all be described by the same typology of theories. This allows transferring knowledge among systems belonging to the same class, with great benefit of the fields in which experimental results are scarce and more difficult to be obtained.

In this talk, I am going to describe how universality is related to effective field theories and how they can be applied from nucleons to hadrons, and atoms; what are their advantages and disadvantages; and the challenges that still remain to be solved in their future.

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