

Are quantum particles objects?

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Abstract

Particle indistinguishability has always been considered a purely quantum mechanical concept. In parallel, indistinguishable particles have been thought to be entities that are not properly speaking objects at all. I argue, to the contrary, that the concept can equally be applied to classical particles, and that in either case particles may (with certain exceptions) be counted as objects even though they are indistinguishable. The exceptions are elementary bosons (for example photons).

Keywords: particles, indistinguishability, quantum, identity of indiscernibles, permutation, symmetry, quantum field

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