

Allgemeines Physikalisches Kolloquium

Verleihung des Lehrpreises

Donnerstag, 15.07.2021 um 16 Uhr c.t.

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The Mereological Problem of Entanglement

The discipline of mereology treats the question how parts and wholes relate and has its roots in ancient Greek philosophy. Especially in the 20th century its concepts have been sharpened considerably resulting in a formalism called classical mereology. From this point of view, entangled quantum systems are an anomaly since they are well-known to involve some kind of holism in the sense that the quantum state of the whole cannot be reduced to the quantum state of the parts. Are entangled systems undivided wholes? In this talk I shall argue on the basis of the quantum mechanical formalism that they are not: When two objects are entangled, there are only these objects but no whole, and the holistic entangled property is carried collectively by these objects.

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