

Quantum superposition of complex organic molecules

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Quantum interference experiments allow us to unambiguously demonstrate the wave nature of matter. In the past, matter wave interference experiments have been performed with a variety of objects, ranging from neutrons, atoms, and even complex organic molecules.

I will present recent successful quantum interference of large organic molecules [1], as well as new results with molecules beyond $m=104$ u, the current mass record in any type of quantum superposition experiment. Additionally I will discuss the influence of the internal molecular properties, such as permanent and vibrationally induced electric moments [2] [3] [4] on quantum coherence and the use of de Broglie interferometry as a tool to precisely measure these quantities.

References

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