

Plenary talks (PV)

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PV I Mo 11:00 E 415 und E 214

Quantum interference experiments with massive matter —

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Matter wave interferometry with organic molecules and clusters is based on many achievements in quantum experiments with electrons, neutrons and atoms. We will therefore briefly review the state of the art in de Broglie-interferometry, i.e. in single-particle center-of-mass coherence.

We will then address in particular the new challenges and benefits to be expected in quantum experiments with internally highly complex and very massive objects.

We study the foundations of quantum physics, by visualizing the wave-particle duality and by exploring the potential or practical limits for the quantum delocalization of massive bodies.

We also discuss new ideas on how to turn de Broglie interferometry into a novel tool for sensing a variety of internal properties of clusters and molecules as well as for probing external force fields.