

Physikalisches

June 26, 2025 16:15

Gustav-Mie-Hörsaal

snacks and drinks served at 17:30

Prof. Wolfgang Paul



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Quantum Analytical Mechanics: What is it and what is it good for?

The question of whether the Schrödinger equation has to be considered the complete description of (non-relativistic) quantum phenomena or not, has occupied the physics community since the famous controversy between Einstein and Bohr at the 1927 Solvay conference. The famous measurement problem of quantum mechanics and its diverse suggested resolutions are part of this history.

Based on Nelson's derivation of the Schrödinger equation from the Newtonian dynamics of a time-inversion invariant diffusion process in 1966, by now a complete theory of quantum analytical mechanics has been developed. I will present its structure and discuss applications to the tunneling phenomenon, the dynamic stability of the hydrogen atom in the ground state and the violation of Bell's inequalities in the Einstein-Podolski-Rosen-Bohm thought experiment.



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Kolloquium