

PHYSIKALISCHES KOLLOQUIUM

Wintersemester 2025/2026

Das Kolloquium findet (soweit nicht anders angegeben) **jeweils montags um 14:15 Uhr im Röntgen-Hörsaal** des Physikalischen Instituts, Hubland Campus Süd, Universität Würzburg **und online via Zoom** statt.

Zugangsdaten siehe <https://www.physik.uni-wuerzburg.de/aktuelles/veranstaltungen-aus-der-physik/physikalisches-kolloquium/>

02.02.2026

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Can the emergence of definite quantum measurement outcomes be explained mechanistically?

Abstract

The linearity of the Schrödinger equation together with the assumption that the wave function of Quantum Mechanics is complete (i.e. no hidden variables) are in conflict with the expectation that measurements yield definite outcomes. We do observe definite outcomes, however. In fact, our everyday world appears surprisingly classical with no superpositions of dead and alive cats. This is commonly referred to as the quantum measurement problem. In the last decades primarily three proposals for a solution of this problem survived (de-Broglie-Bohm, Ghirardi-Rimini-Weber and Everettian many worlds). On the one hand all three proposals are more amenable to a realistic reading than the Copenhagen interpretation, which has an instrumentalist inclination. On the other hand, it is not so obvious to which extent they supply mechanistic explanations for the emergence of definite quantum measurement outcomes in terms of real spatiotemporal processes. I will argue that although all three accounts allow, albeit in very different ways, for a mechanistic reading, this comes at costs which may be unexpected and in some cases intolerable.

Für die Dozentinnen bzw. Dozenten der Fakultät

Prof. Dr. Palffy-Buß, Prof. Dr. Klembt, Dr. Hammer, Hr. Baumbach, Fr. Schleicher