

**Einladung
zum
Physikalischen Kolloquium
Montag, 12.10.2015, 16:15 Uhr in N24/H13**

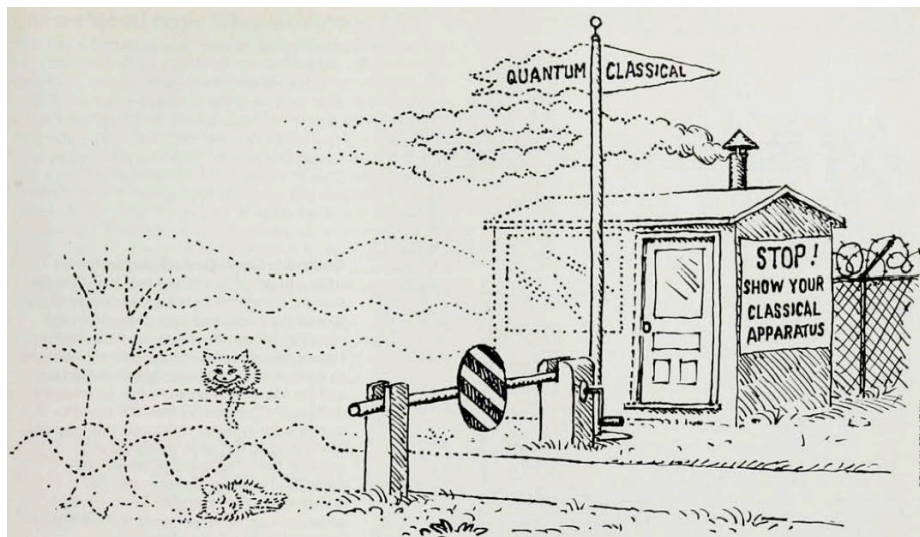


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Quantum Theory of the Classical: Decoherence and the Randomness of Quantum Jumps

I will describe recent insights into the transition from quantum to classical. I will start with (i) a minimalist (decoherence-free) derivation of preferred pointer states – candidate classical states. Such pointer states can be used to define events (e.g., measurement outcomes) without appealing to Born's rule ($p_k = |\psi_k|^2$). Probabilities and (ii) Born's rule can be then derived from symmetries of entangled quantum states. Derivation of Born's rule will be the focus of my lecture. With probabilities at hand one can analyze information flows from the system to the environment in course of decoherence. They explain how robust "classical reality" arises from the quantum substrate by accounting for the familiar symptoms of objective existence of pointer states of quantum systems through redundancy of their records in the environment. Taken together, and in the right order, these advances elucidate quantum origins of the classical.

W. H. Zurek, Physics Today, vol. 67 (10), pp. 44-50 (2014).



Ab 16.00 Kaffee, Tee und Kekse vor dem Hörsaal H13

Organisation: Prof. Dr. F. Jelezko, Tel. 23750

Host: Prof. Dr. W. Schleich, Tel. 23080, off.: 23081