

Antrittsvorlesung

des Leibniz-Professors im Sommersemester 2019

Dienstag, den 21.05.2019, 17.00 Uhr

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WEAK MEASUREMENT: A peephole into quantum reality

Measurement is an inherent component of quantum dynamics. In the very early days of quantum mechanics, John von Neumann has introduced the notion of a “collapse” of the system’s quantum state, following its measurement by an external observer. The much later introduced concept of weak measurement enables one to extract information about the system’s state, without dramatically affecting the latter. Can we exploit weak measurements for purposes other than extraction of information? Surprisingly, the answer is in the affirmative. Examples include signal amplification, quantum state discrimination, and the dawn of a new paradigm: quantum state engineering and error correction through weak measurements.