



Sebastian Deffner
(Universität Augsburg)

Energy-time uncertainty relation for driven quantum systems

We derive generalizations of the energy-time uncertainty relation for driven quantum systems. Using a geometric approach based on the Bures length between mixed quantum states, we obtain explicit expressions for the quantum speed limit time, valid for arbitrary initial and final quantum states and arbitrary driving protocols. Our results establish the fundamental limit on the rate of evolution of generic quantum systems.

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**Universität Ulm, Raum N25/4413
Albert-Einstein-Allee 11, 89081 Ulm**

