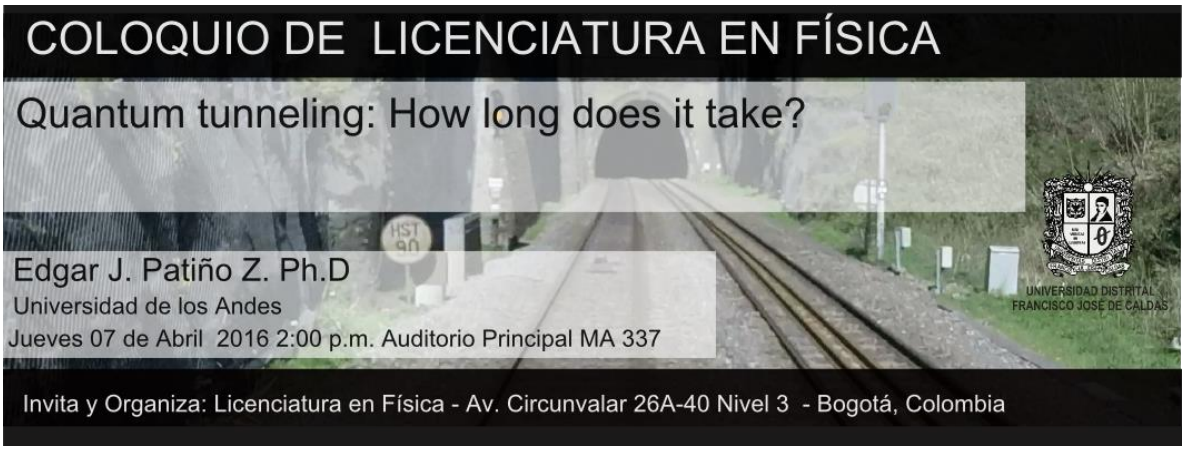

ABSTRACT: Quantum tunneling is one of the most counterintuitive and striking effects of quantum mechanics that has been confirmed in numerous experiments. Here the electron can cross a potential barrier even though it has less energy than the barrier height.

One question that still remains controversial among the physics community is the time an electron takes to cross a barrier.

There are only approximate numbers in the literature. This is due to its small value compared to current instrument's capabilities therefore such experiments are controversial. In the present work we are able to extract a precise value from experiment of the so called dwell time corresponding to the duration of time that an electron stays in the barrier. This has been done for the first time using a solid state tunnel junction.

E. J. Patiño and N. Kelkar "Experimental determination of tunneling characteristics and dwell times from temperature dependence of Al/Al2O3/Al junctions" Applied Physics Letters 107 (25) 2015