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On the universal tunneling time

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These days the tunneling process is for instance applied in fiber optic communications and even in cars as windscreen wiper. Tunneling is a universal process in all fields. One property of tunneling is of special interest: the time the wave packet spends inside the barrier. Recent investigations have been carried out in electromagnetic and elastic fields. The tunneling and barrier interaction times of neutrons have been previously studied. Here we show that the neutron interaction time with barriers corresponds to the universal tunneling time of wave mechanics, which was formerly observed with elastic, electromagnetic, and electron waves. The universal tunneling time seems to also hold for neutrons. Such an adequate general wave mechanical behavior was conjectured by Brillouin. Remarkably, wave mechanical effects and even virtual particles hold from the microcosmos up to the macrocosm.

Biography

Günter Nimtz has completed his PhD in the year 1969 from Vienna University. At that time he studied semiconductor physics and discovered the negative differential resistivity of hot carriers in Tellurium. Later he investigated the electromagnetic interaction of biophysical systems and spent much time with the faster than light propagation of tunneling microwave signals. He has published more than 200 papers and several books in reputed journals. He has several patents, which for example are applied in electromagnetic compatibility chambers and in the preparation of rare earth metals. He is a retired Professor of Physics at the University of Cologne.

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