

## Abstract

The claims that the GSI time anomaly is due to the mixing of neutrinos in the final state of the observed electron-capture processes are refuted. With the help of an analogy with a double-slit experiment, it is shown that the standard method of calculation of the rate of an interaction process by adding the rates of production of all the allowed final states, regardless of a possible coherence among them, is correct. It is a consequence of causality. It is shown that the GSI time anomaly may be caused by quantum beats due to the existence of two coherent energy levels of the decaying ion with an extremely small energy splitting (about  $6 \times 10^{-16} eV$ ) and relative probabilities having a ratio of about 1/99.