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Possible observations of microwave influences on quantum states and transition rates ROBERT POTTER, Coe College, SIMON BERKOVICH, George Washington U. — A realistic interpretation of quantum phenomena leads to a conclusion that there might be a hidden mechanism guiding the transition of quantum objects. Thus, manipulations of such a mechanism may affect the regular pathways of quantum phenomena. A recently formulated hypothesis suggests that quantum phenomena on the mesoscopic scale can be influenced by microwave radiation of order 10ˆ11 Hz. This frequency seems to present a watershed between observable quantum effects and classical physics. Electromagnetic activities at higher frequency exhibit characteristic quantum mechanical behavior whereas at lower frequency they present typical Maxwell waves. In the range of 10ˆ11 Hz both kinds of electromagnetic activities coexist: millimeter microwaves and far-infrared quanta. The destruction of long-range quantum order in superconductors at about 10ˆ11 Hz is interpreted in terms of energy gap influences. The same effect could be also responsible for a small but importunate impact of the 10ˆ11 Hz radiation on biological objects. In this work, we propose to investigate the possible impacts of this radiation on quantum phenomena. This includes the study of the decay rate changes of certain nuclei when exposed to microwave radiation and electron tunneling between superconductors. The suspected mechanism could be recognized experimentally as it would imply a clear threshold effect at some point around the 10ˆ11 Hz frequency.

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