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Progress in Electromagnetic Alteration of Nuclear Decay Properties R.J. CASPERSON, R.O. HUGHES, J.T. BURKE, N.D. SCIELZO, R. SOUFLI, Lawrence Livermore National Laboratory — Significant alteration of nuclear decay properties would have important consequences, ranging from novel approaches to nuclear batteries and gamma-ray lasers, to improved viability for physics experiments with short-lived targets. Quantum systems that decay by photon emission must couple to the electromagnetic modes of the local environment, and by modifying these modes, one can manipulate the rate of spontaneous emission. The nuclear isomer ^{235m}U is low-energy, long-lived, and is easily populated through ^{239}Pu α -decay, which makes it an excellent benchmark for this effect. The decay rate of this isomer in a variety of environments is currently under investigation. Implications of this work will be discussed, and first results will be presented. This work performed under the auspices of the U.S. Department of Energy by Lawrence Livermore National Laboratory under Contract DE-AC52-07NA27344.

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