

Abstract Submitted  
for the DNP10 Meeting of  
The American Physical Society

**Observation of second-order radiative transitions in nuclei**

ROBERT CHRIEN, Brookhaven National Laboratory — Second order nuclear radiative transitions have been observed in the decay of  $^{137}\text{Ba}$  from a  $^{137}\text{Cs}$  source. Such a decay is expected from second order perturbation theory at a level of  $1/\alpha)^2$ , or about  $10^{-4}$ . Second order transitions have been observed before only in the special case of  $0^+$  to  $0^+$  transitions where there is no competing first order transition. In the present work, transitions, which proceed via unspecified virtual states in  $^{137}\text{Ba}$  and consist of various multipole mixtures, are reported. It is expected that these new data will stimulate further research into this long-neglected area of nuclear research.

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Date submitted: 25 Jun 2010

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