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Simulated models of perturbed angular correlation (PAC) spectroscopy in a 4-state+S system¹ JEFFERY A. HODGES, MICHAEL A. STUFFLEBEAM, WILLIAM E. EVENSON, P. MATHESON, Utah Valley State College, M.O. ZACATE, Northern Kentucky University — Cerium oxide has a cubic crystal structure. A vacancy in CeO₂ can be trapped by a probe atom and hop among equivalent 1st or 2nd neighbor sites of the probe, producing a fluctuating electric field gradient (EFG) at the probe nucleus. We have simulated the perturbed angular correlation (PAC) spectrum due to such a changing EFG (4-state model), as well as the case with an additional static background EFG (4-state+S). We have studied the effect of changing the defect hopping rates on the resulting spectrum and the inferred hyperfine parameters. We have analyzed these data to determine experimental conditions under which nonequilibrium initial probe distributions can be detected by PAC.

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Prefer Oral Session
 Prefer Poster Session

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