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Ferroelectric switching of KDP (KH_2PO_4) and doped KDP:Cr simultaneously studied by the epr and Mertz methods[1] FRANCISCO RODRIGUEZ PEREZ, JUAN FRAGOSO, PAUL HARRIS, MARISELA APARICIO, KENNETH ULIBARRI, MONICA MARCIAL-ARMENTA, TIMOTHY USHER, California State University San Bernardino — Preliminary experimental results on ferroelectric switching in KDP will be presented. Additionally, a modified closed cycle cryogenic system for epr will be presented. Our goal is to reconcile differences in (epr) spectroscopy and the Mertz method on the simple ferroelectric, KDP/KH_2PO_4. A closed cycle cryogenic system, capable of reaching temperatures well below the Curie point of KDP (123K) was modified to accommodate the two measurements. The epr measurements probe the bulk of the KDP and favors slow ferroelectric domain switching while the Mertz method probes the surface and favors fast switching. A compromise in switching time between epr and Mertz is necessary. Preliminary results show the expected splitting in the epr lines near 1.45 kG. The Mertz data show switching currents consistent with the nucleation and domain growth model. The switching times are on the order of 20 microseconds for temperatures of approximately 100K. In addition to doped KDP we plan to investigate irradiated KDP and DKDP.

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