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Pulsed ENDOR at 240 GHz of nitrogen centers in 4H-SiC: towards a detailed description of the wavefunction. JOHAN VAN TOL, National High Magnetic Field Laboratory, Florida State University, Tallahassee, FL 32310, MARY-ELLEN ZVANUT, Department of Physics, University of Alabama at Birmingham, Birmingham, AL 35294-1170 — SiC is a very suitable semiconductor material for high power and high temperature applications. The electronic properties of many different defects and dopants in various polytypes have been studied by electron paramagnetic resonance (EPR), including various common nitrogen substitutional defects. In particular, *high frequency* EPR has proven very powerful in separating the EPR signals of different sites, while the nuclear transitions of hyperfine coupled ^{29}Si and ^{13}C that are observed by electron nuclear double resonance (ENDOR) can be well separated. Here we report on new data on the hexagonal nitrogen center in 4H-SiC, for which the hyperfine interaction with the surrounding silicon and carbon shells was measured by pulsed ENDOR at 240 GHz. While these measurements give precise values for the electron spin density on the surrounding atoms, the assignment of these densities to particular atomic sites has proven challenging. The multivalley structure of the conduction band in this indirect semiconductor complicates the analysis. We will discuss the observed results and propose a tentative assignment on the basis of the Kohn-Luttinger theory. Supported by the NSF though grants DMR-0654118 and NSF DMR-0520481.

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