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The Wavefunction of Nitrogen Shallow Donors in 4H-SiC Probed by 240 GHz Pulsed EPR/ENDOR JOHAN VAN TOL, Center for Interdisciplinary Magnetic Resonance, National High Magnetic Field Laboratory, Florida State University, Tallahassee, FL-32310, USA, MARY-ELLEN ZVANUT, Department of Physics, University of Alabama at Birmingham, Birmingham, AL 35294-1170, USA — SiC is a very suitable semiconductor material for high power and high temperature applications. New fabrication techniques are also overcoming its drawback that it can crystallize in any of over 200 known polytypes. In view of the growing interest in this material for various applications, the electronic properties of many different defects and dopants have been studied by EPR.¹ In particular, high frequency EPR has proven very powerful in separating the EPR signals of different sites, and the ENDOR signals of different nuclei.² However, the multivalley structure of the conduction band makes it difficult to assign measured spin densities to specific nuclei. Here we present ²⁹Si and ¹³C pulsed ENDOR measurements at 240 GHz on the N_h center in 4H-SiC and a N_h-N_c pair,³ and discuss the results in terms of the electron wavefunction (spin-distribution) of these shallow donors. Supported by NSF grants DMR-0084173 and NSF DMR-0520481.

¹Greulich-Weber, Phys. Stat. Sol.A 162, 95 (1997).

²van Duijn-Arnold et al., Phys. Rev. B. 64, 085206 (2001).

³Zvanut and van Tol, Physica B. 401-402, 76 (2007).

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