

Abstract Submitted  
for the DNP20 Meeting of  
The American Physical Society

**NMR Analysis of Polarized Spin-1 Solid-State Targets** JOEY CLEMENT, DUSTIN KELLER, Univ of Virginia — The spin-1 NMR lineshape for polycrystalline materials can be manipulated with selective semi-saturating RF. This process can be performed strategically during dynamic nuclear polarization to continuously enhance the tensor polarization of the spin-1 target. Our research offers new analytical descriptions of the spin polarized energy levels that produce the lineshape (as well as new analysis of the lineshape itself). A simulation of the spin-1 NMR lineshape's response to polarizing radiation as well as semi-saturating RF has been developed, with the aim of studying tensor polarization enhancement using the RF power and time profile with optimized modulation. Additional solid-state NMR effects are also included in the simulation, such as a treatment of the adiabatic-fast-passage (AFP). Both the analytical description of the information contained in the lineshape as well as the method to produce simulations of enhancement under the environment necessary for application in high-energy and nuclear scattering experiments are provided.

Joey Clement  
Univ of Virginia

Date submitted: 26 Jun 2020

Electronic form version 1.4