Proposed measurement of the neutron spin-rotation through solid ortho-deuterium. A. KOMIVES, De Pauw Univ., D.M. MARKOFF, B.J. CROWE, NC Central Univ. — In recent review papers [1,2] a program to study parity-violating (PV) nucleon-nucleon (NN) interaction observables including spin-rotation in the $\vec{n}$-$\alpha$ and $\vec{n}$-$p$ systems has been proposed to characterize the weak NN interaction. The rotation of the transverse neutron polarization vector as the long-wavelength neutron traverses the medium, results from the PV weak forward scattering amplitude. We propose that the spin-rotation observable in the $\vec{n}$-d system would greatly contribute to this experimental and theoretical effort. Neutron depolarization from a relative large scattering cross section of a few barns in the deuterium could greatly dilute the small rotation signal on the order of $10^{-7}$ radians. Recent measurements were performed at the FUNSPIN beam line at the Paul Scherrer Institute of the depolarization of neutrons transmitted through liquid and solid ortho-deuterium as a function of neutron energy [3]. Results indicate that the observed depolarization of cold neutrons through solid ortho-deuterium is low enough for a measurement of the neutron spin-rotation to be feasible. We present here a proposed apparatus and program to measure the neutron spin-rotation in the $\vec{n}$-d system.