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Construction and commissioning of the magnetic field system for the NPDGamma experiment at the SNS and results of the spin transport calculations SEPTIMIU BALASCUTA, RICARDO ALARCON, Arizona State University, STEFAN BAESSLER, University of Virginia, JASMIN SABINA SCHADLER, Jacobs University, NPDGAMMA COLLABORATION — The NPDGamma experiment measures the parity-violating (PV) angular asymmetry of the gamma rays emitted in the capture of the polarized cold neutrons on protons. The neutrons from the Spallation Neutron Source (SNS) are polarized by a super mirror polarizer with a 350 G internal field. The polarizer fringe field is decreased using an additional magnet. After the polarizer the neutrons are guided to the hydrogen target by a uniform, stable, and vertical magnetic field of 9.5 Gauss. The direction of the neutron spin is reversed on a pulse- by-pulse basis by a resonant spin rotator located in front of the target. Downstream from the spin rotator the relative field gradient in the vertical direction has to be smaller than 3E-4 cm^{-1}. The field has to be vertical and aligned with the vertical axis of the detector with a precision better than 0.1 degrees to avoid the mixing of the left-right and up-down angular asymmetry. Measurements of the NPDGamma magnetic field and the simulation of the neutron spin transport will be presented.

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