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Resonant Frequency Spin Flipper for the nHe3 Experiment CHRISTOPHER HAYES, University of Tennessee, Knoxville, N3HE COLLABORATION — The n^{3}He experiment, currently being installed on beamline-13 at ORNL's Spallation Neutron Source (SNS), is designed to measure the proton asymmetry associated with the interaction of neutrons with a gas of ^{3}He via

$$n + {}^3_2\mathrm{He} = {}^3_1\mathrm{H} + {}^1_1\mathrm{H} + 765\,\mathrm{KeV} \quad (1)$$

The experiment uses a Resonant Frequency Spin Flipper (RFSF) to flip the neutron spins. The spin flipper is similar to the one described by P.N. Seo et al (PR ST Accel. Beams 11 084701, 2008) with significant improvements. Most important is the inclusion of a "double cosine-theta" winding pattern that provides a highly uniform interior field with no fringing. A critical feature of the coil is complex flux returns whose construction was made possible through the utilization of 3D print technology.

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