

Abstract Submitted  
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**Progress on the stationary pNMR array of the new muon ( $g-2$ ) experiment at FNAL**<sup>1</sup> MARTIN FERTL, ALEJANDRO GARCIA, RACHAEL MORRIS, COLE HELLING, RONALDO ORTEZ, RACHEL OSOFSKY, ERIK SHAW, MATTHIAS SMITH, ERIK SWANSON, Department of Physics, University of Washington, NEW MUON G-2 COLLABORATION — One of the most stringent low-energy tests of the Standard Model (SM) of Particle Physics is the measurement of the muon's anomalous magnetic moment, called  $(g - 2)/2$ . The BNL E821 collaboration has measured  $(g - 2)/2$  to a precision of 0.54 ppm. This result deviates by more than three standard deviations from the SM prediction. Thus the FNAL E969 collaboration has set out to measure  $(g - 2)/2$  to a precision of 0.14 ppm. The applied measurement technique relies on the accurate determination of the muon's Larmor frequency in a highly homogeneous magnetic field (0.17 ppm in BNL E821, 0.07 ppm in FNAL E969) of an electric and magnetic storage ring. The spatial magnetic field distribution along the storage ring is determined by pulling a trolley with pulsed proton nuclear magnetic resonance (pNMR) probes through its vacuum chamber. Since this cannot be performed during the muon measurements the magnetic field is interpolated in time between the trolley measurements using a fixed array of about 400 pulsed pNMR probes distributed around the storage ring. We will present the efforts made at the Center for Nuclear Physics and Astrophysics at the University of Washington to prepare and test the stationary pNMR probes array. Here we will present the status of the system.

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