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Temperature dependence of the signal of the NMR probes for the muon (g-2) experiment RACHAEL MORRIS, MARTIN FERTL, ALEJANDRO GARCIA, COLE HELLING, RONALDO ORTEZ, RACHEL OSOFSKY, ERIK SHAW, MATTHIAS SMITH, ERIK SWANSON, University of Washington — The latest investigation of the anomalous magnetic moment of the muon requires accurate and precise measurement of the magnetic field in the storage ring. The field is mapped using a series of pulsed proton NMR probes and knowing the response of the probes under different conditions is key to attaining the precision necessary for the experiment to take into account all possible systematic effects. While the temperature correction for the diamagnetic shielding of water in proton NMR is known experimentally and taken into account in previous incarnations of this experiment, the future probes will use petroleum jelly and the temperature dependence of the response of these probes is not well documented. We have been using a repurposed analyzing magnet used by the (g-2) group at the University of Washington for this investigation. Here I will discuss the methods, challenges and results we have obtained.

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