

Abstract Submitted  
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**Dispersion Measure Variations in the NANOGrav Nine-Year Data Set**<sup>1</sup> MEGAN JONES, MAURA MCLAUGHLIN, West Virginia University, NANOGrav TIMING GROUP COLLABORATION, NANOGrav IMM GROUP COLLABORATION — The North American Nanohertz Observatory for Gravitational waves (NANOGrav) is a collaboration of scientists working to detect gravitational waves using pulsar timing. Dispersion, a frequency-dependent time delay caused by free electrons along the line of sight, needs to be corrected for in the pulsar data in order to achieve the necessary sensitivity required to detect gravitational radiation. We analyze the dispersion measure (DM) variations of 37 milliseconds pulsars in the nine-year NANOGrav data release and constrain the sources of these variations. Variations in the DM over time can be caused by a variety of factors, including an increasing or decreasing distance between the pulsar and the Earth, inhomogeneities in the ISM, and solar effects. We fit for these types of trends in the DM measurements with time to measure the scale and periodicity, if any, of the variations. We present the structure functions of these pulsars and compare them to that expected for a Kolmogorov medium.

<sup>1</sup>Dispersion Measure Variations in the NANOGrav Nine-Year Data Set

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