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Bow-Shock Pulsar Wind Nebulae Searches Aided by the North American Nanohertz Observatory for Gravitational Waves CHRISTOS GIANNAKOPOULOS, TIMOTHY DOLCH, Hillsdale College, SHAMI CHATTERJEE, JAMES CORDES, Cornell University, T. JOSEPH W. LAZIO, Jet Propulsion Laboratory, California Institute of Technology, SCHUYLER VAN DYK, Spitzer Science Center, California Institute of Technology, LAURA SALO, Hillsdale College — Bow-shock pulsar wind nebulae (PWNe) are formed by high velocity neutron stars moving through the interstellar medium (ISM). Shocking the ISM produces Balmer emission. Nine H-alpha bow-shock PWNe are known, but the discovery space has not been entirely explored, especially for more recently timed pulsars. We searched for new nebulae using images of high velocity neutron stars taken by the Hale 5-meter telescope in the Palomar Observatory and the Mayall 4-m Telescope at Kitt Peak National Observatory. We used recent astrometric data from the 11-year data release from the North American Nanohertz Observatory for Gravitational Waves (NANOGrav) to determine the direction and velocity of each of the pulsars that would reveal any H-alpha bow-shock PWNe. We did not identify new PWNe, but we report upper limits on surface brightness.

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