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Spectropolarimetry of Type Ia Supernovae: An investigation of the Si II 6355 Feature in SN 2018gv

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Type Ia Supernovae (SNe Ia) arise from carbon oxygen white dwarfs, but the true nature of their progenitor systems and explosion mechanisms remains the subject of considerable debate. The various progenitor models and methods of ignition result in different ejecta morphologies and/or distributions of material. By observing the polarization of SNe spectra we can gather insight into the geometry of these explosions. A key diagnostic that appears to be correlated with other SN Ia properties is the change in polarization observed across the Si II 6355 Å feature near maximum light. To investigate this, we are undertaking a systematic analysis of this feature in a uniformly obtained sample of SNe Ia observed at multiple epochs as part of the Supernova Spectropolarimetry (SNSPOL) Project, which gathered data, from 2010-2018, using the CCD Imaging/Spectropolarimeter (SPOL) on the 61" Kuiper, 6.5 m MMT, and 90" Bok telescopes. Here we present a preliminary analysis of the Si II feature in a particularly well-observed object from our sample, SN 2018gv, and present 10 epochs of data spanning from 10 days before, to 22 days after, peak light. We compare our near-maximum SNSPOL data with complementary data presented by Yang et al. [1]. This work was supported by NSF grants AST-1210311 and AST-2010001, and NASA grant NNX15AU81G. References: [1] Yang, Yi et al. 2020, ApJ, 902.