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Nebular Phase NIR Spectroscopy of Sibling Supernovae SAHANA KUMAR, ERIC HSIAO, Florida State University, CSP COLLABORATION — We present multi-wavelength nebular-phase time-series spectroscopy of SN 2013aa and SN 2017cbv, two SNe Ia on the outskirts of the same host galaxy NGC 5643, by the Carnegie Supernova Project-II. These sibling SNe were well observed at both early and nebular phases, providing an excellent opportunity to study the SN Ia intrinsic diversity. The new nebular-phase near-infrared (NIR) spectra are supplemented with previously published optical and NIR spectra. The explosion kinematics were assessed by measuring multiple nebular-phase [Fe II] lines in both the optical and NIR. The NIR [Fe II] 1.644 micron line provides the most robust velocity measurements against the choice of the fit method and line blending compared to its optical counterparts. Compared to the optical, the NIR velocities have the same radial shift direction, but the sizes of the shifts are consistently and substantially lower, pointing to a potential issue in optical studies. Methods for detecting asymmetries and viewing angle effects were also tested and provided corroborating evidence in both the optical and NIR.

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