Title:	Optical and X-ray studies of three polars: RX J0859.1+0537, RX J0749.1-0549, and RX J0649.8-073
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Abstract:	We present optical photometric and spectroscopic observations, and an analysis of archival X-ray data of three polars: RX J0859.1+0537, RX J0749.1–0549, and RX J0649.8–0737. Optical light curves of these three polars reveal eclipse-like features that are deep, total, and variable in shape. The optical and X-ray modulations of RX J0859.1+0537, RX J0749.1–0549, and RX J0649.8–0737 are both found to occur at the orbital periods of 2.393 ± 0.003 h, 3.672 ± 0.001 h, and 4.347 ± 0.001 h, respectively. RX J0859.1+0537 is found to be a polar that lies in the region of the period gap, whereas RX J0749.1–0549 and RX J0649.8–0737 are found to be long-period polars above the period gap. The eclipse length is found to be 61 min for RX J0749.1–0549 in the Rband, which is the highest among the long-period eclipsing polars. The radius of the eclipsed light source is found to be more than the actual size of the white dwarf for these three systems, indicating that the eclipsed component is not only the white dwarf but also appears to include the presence of an extended accretion region. Optical spectra of these systems show the presence of high-ionization emission lines along with the strong Balmer emission lines with an inverted Balmer decrement. Cyclotron harmonics are also detected in the optical spectra from which we infer magnetic field strength of the surface of the white dwarf to be 49 ± 2 MG, 43.5 ± 1.4 MG, and 44 ± 1 MG for RX J0859.1+0537, RX J0749.1–0549, and RX J0649.8–0737, respectively.
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