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CCD OBSERVATION OF THE 1999 FADING OF LQ Peg

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LQ Peg (= PG 2133+115) was discovered as a UV-excess object, which was subsequently confirmed as a cataclysmic variable (Green et al. 1982, 1986; Ferguson et al. 1984). A spectroscopic period of 2.9 hr was suggested by Ringwald (1993). Little had been known about its light variability until the discovery of a dramatic fading recorded on photographs taken in 1969 (Sokolov et al. 1996). Although the object can be a potential candidate for the shortest period VY Scl-type star, the lack of the corresponding GCVS type has partly made LQ Peg overlooked even after receiving the variable star designation (Kazarovets and Samus 1997).

The second historical fading of LQ Peg was detected by Watanabe (1999). The object was seen fainter than 14.6 on 1999 July 9.716 UT. Upon this alert, we started CCD photometry to follow the fading episode.

The observations were done using an unfiltered ST-7 camera attached to the Meade 25-cm Schmidt-Cassegrain telescope. The exposure time was 30 s. The images were dark-subtracted, flat-fielded, and analyzed using the JavaTM-based PSF photometry package developed by one of the authors (TK)#. The relative magnitudes of the variable were measured against GSC 1128.64 (R_C -magnitude 13.03, Henden and Honeycutt 1997), whose constancy was confirmed by comparison with GSC 1128.678 (USNO r -magnitude 14.0).

The resultant light curve is shown in Figure 1. Each point represents a nightly averaged magnitude, with an error bar indicating the standard error. There was a slow brightening trend after the apparent minimum on August 24 (JD 2451415). The faintest observed magnitude corresponds to 16.32, which is slightly brighter than the 1969 minimum (Sokolov et al. 1996). Then the brightness of the object rose linearly with a rate of 0.036 mag d⁻¹ until September 23 (JD 2451445). The rising became slower thereafter. The general pattern and time-scale of the recovery from minimum closely resemble those observed in 1969 (Sokolov et al. 1996), and are consistent with the general characteristics of VY Scl-type novalike variables. The object has been sparsely monitored by the VSOLJ (Variable Star Observers Leagues in Japan) since 1997 without other noticeable fadings. Together with photographic and photoelectric observations by Sokolov et al. (1996), this object seems to spend most of the time in bright states, with relatively short excursions to faint states.

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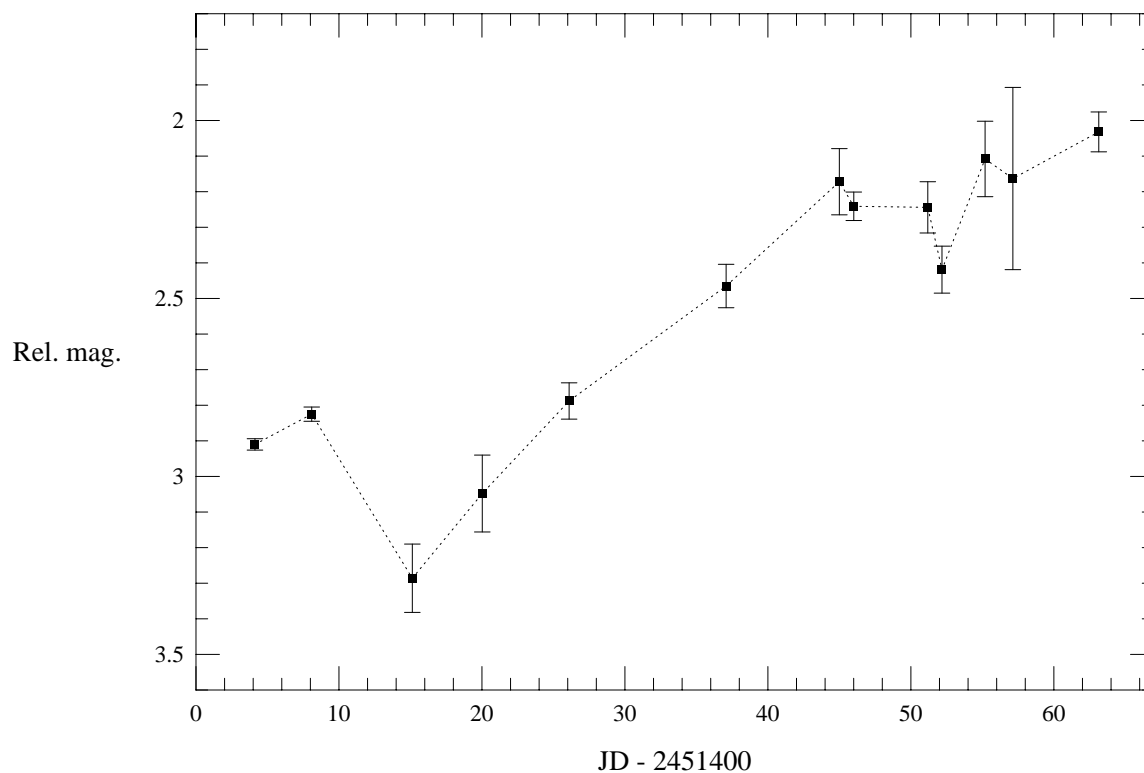


Figure 1. Light curve of LQ Peg

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