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# Discovery and Characterization of a Mira variable from MASTER Optical Transient J212444.87+321738.3

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## Abstract

We present here discovery of a Mira Variable from MASTER Optical Transient J212444.87+321738.3 toward the Cygnus from long-term optical/near-IR photometric and spectroscopic observations. We estimated the period of the variable to be  $465 \pm 30$  days using the best-fit optical or Near-IR light curves, and strong wavenumbers  $4\text{ mag}$ ,  $\Delta C(400 - 900\text{ nm}) \sim 3.4\text{ mag}$ ,  $\Delta J \sim 2.2\text{ mag}$ ,  $\Delta H \sim 1.9\text{ mag}$  and  $\Delta K \sim 1.5\text{ mag}$  respectively. Optical/Near-IR spectra show the molecular features like TiO, VO, CO overtone, water bands and lithium stars. All of these observed characteristics confirm that the source is a O-rich Mira variable. We also study phase-dependent variations of optical/Near-IR spectral features of the object over the Miraphase, which has similar behaviour to IR photometric and spectroscopic observations.

**Keywords:** Mtype, Mira, Orich

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