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# A sudden brightness decrease of the young pre-MS object GM Cep

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on 24 Nov 2017; 14:38 UT

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Subjects: Optical, Variables, Young Stellar Object, Pre-Main-Sequence Star

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In the framework of our EXor monitoring programme dubbed EXORCISM (EXOR OptiCal and Infrared Systematic Monitoring - Antonucci et al. 2013 PPVI, Lorenzetti et al. 2007 ApJ 665, 1182; Lorenzetti et al. 2009 ApJ 693, 1056), we observed a new fading of the optical brightness of the Young Stellar Object (YSO) GM Cep ( $d=870$  pc). This is a well studied variable (Semkov & Peneva 2012 APSS,338,95; Ibryamov et al. 2015 PASA,32,11; Xiao, Kroll, & Henden 2010 AJ, 139, 1527; Sicilia-Aguilar et al. 2008 ApJ,673,382-3) whose light-curve is dominated by recurrent brightness dims, interpreted as non-periodical eclipse events due to orbiting dust structures that move along the line of sight (UXor-type variability - Grinin 1988). Our photometry has been obtained on Nov 23.81 (UT) with the ANS Collaboration 40cm telescope ID-66 and provides  $V=14.91$ ,  $B-V=1.31$ ,  $V-R=0.92$ ,  $V-I=1.95$  (errors about  $\pm 0.01$ ). The estimated drop in the V-band is of about 2 mag. Our photometric colors are in agreement with those provided by Semkov & Peneva (2012), confirming the blueing effect typical of the UXor variables at low luminosity levels. A (quasi-)simultaneous flux-calibrated low-res spectrum (3500-8000 Å, 2.31 Å/pix) has been also collected on Nov. 23.71 (UT) with the Asiago 1.22m + B&C spectrograph (depicted in [this figure](#)). The  $H\alpha$  integrated flux is  $8.9 \pm 0.1 \cdot 10^{-14}$  erg/cm<sup>2</sup>/s, the  $H\beta$  emission component fills the absorption one, while  $H\gamma$  e  $H\delta$  are in absorption, as well as CaII and BaII. LiI detection is within  $1\sigma$  noise. Unfortunately, GM Cep is embedded within a strong nebulosity that causes an intense background. Remarkably, our spectrum is the first one obtained during a deep brightness minimum, therefore it can be adopted as a solid reference for establishing future variations.

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