



Hops 383: an Outbursting Class 0 Protostar in Orion ()

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We report the dramatic mid-infrared brightening between 2004 and 2006 of Herschel Orion Protostar Survey (HOPS) 383, a deeply embedded protostar adjacent to NGC 1977 in Orion. By 2008, the source became a factor of 35 brighter at 24 μm with a brightness increase also apparent at 4.5 μm . The outburst is also detected in the submillimeter by comparing APEX/SABOCA to SCUBA data, and a scattered-light nebula appeared in NEWFIRM K_s imaging. The post-outburst spectral energy distribution indicates a Class 0 source with a dense envelope and a luminosity between 6 and 14 $\{L_{\odot}\}$. Post-outburst time-series mid- and far-infrared photometry show no long-term fading and variability at the 18% level between 2009 and 2012. HOPS 383 is the first outbursting Class 0 object discovered, pointing to the importance of episodic accretion at early stages in the star formation process. Its dramatic rise and lack of fading over a 6 year period hint that it may be similar to FU Ori outbursts, although the luminosity appears to be significantly smaller than the canonical luminosities of such objects.

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