

CONTROL ID: 2253085

TITLE: A high-resolution mid-infrared spectral survey of H₂O in the circumstellar envelope of VY CMa with EXES on SOFIA

ABSTRACT BODY:

Abstract Body: During March 2015 commissioning observations, the EXES instrument on the Stratospheric Observatory for Infrared Astronomy (SOFIA), observed the O-rich evolved star VY Cyg in the range of 5.57 to 6.67 μm with a resolution ($R=\lambda/\Delta\lambda$) approaching 100,000.

We detect many H₂O vapor lines with P Cygni structure- blueshifted absorption with redshifted emission, as expected from outflowing material in this system. The analysis and identification of other chemical species within this rich data set are ongoing.

The wavelength region of these observations is impossible to observe from ground-based observatories due to atmospheric absorption; past space-based missions such as ISO/SWS were limited to $R\sim 1000$. EXES on SOFIA opens a new frontier for high-resolution spectroscopy at difficult-to-access mid-infrared wavelengths.

CONTACT (NAME ONLY): Curtis DeWitt

CONTACT (E-MAIL ONLY): curtisde Witt@gmail.com

AUTHORS/INSTITUTIONS: C.N. DeWitt, M. Richter, Physics, UC Davis , Sunnyvale, California, UNITED STATES|C.N. DeWitt, NASA Ames, Moffett Field, California, UNITED STATES|A. Boogert, USRA/SOFIA, Moffett Field, California, UNITED STATES|D.A. Neufeld, Physics, Johns Hopkins University, Baltimore, Maryland, UNITED STATES|J. Fonfría, Astronomy, UNAM, Mexico City, MEXICO|J. Cernicharo, Astrobiology, Instituto Nacional de Técnica Aeroespacial, Madrid, SPAIN|

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