Proposal Identification No.: A2230 Date Received: 2006-May-31_13:15:17

Technical Page

Proposal Type:	Regular
General Category:	Astronomy
Sub-Category:	Spectroscopy
Observation Category:	Exoplanets
Total Time Requested:	59 Hours
Minimum Useful Time:	1.75 hours

Proposal Title: OH Masers in Extrasolar Planetary Atmospheres

ABSTRACT:

We propose to observe 14 nearby "hot Jupiters" for 18 cm OH masing lines. The sample includes two transiting planets in order to explore the possibility of detecting maser-amplified stellar radio continuum during transit. Florescent emission from non-transiting planets would determine the mass of planets, resolving the $M \sin i$ degeneracy of the doppler detection method. Extrasolar planetary atmospheres are poorly constrained, and detection of molecular maser line(s) would provide new insight into chemistry, excitation, and winds. The unknown properties of "hot Jupiter" atmospheres make prediction of OH masers difficult, but theoretical work and the detection of the exosphere of HD 209458b suggest detectability by Arecibo if masers are present. Detection of any maser emission would trace the chemical and kinematic properties of the masing gas and would provide planetary masses. Detection of strong maser emission would suggest a new detection technique for extrasolar planets. We request 59 hours of observing time to investigate the possibility of planetary masers.

Name	Institution	E-mail	Phone	Student
Jeremy Darling	University of Colorado	jdarling@origins.colorado.edu	303 492 4881	no

Remote Observing Request

- [ ] Observer will travel to AO
- [X] Remote Observing
- [ ] In Absentia (instructions to operator)

Instrument Setup

L-wide

Atmospheric Observation Instruments:

Special Equipment or setup: none

RFI Considerations

Frequency Ranges Planned

1600 - 1730

This proposal requires Iridium RFI protection at 1612 MHz between 10pm and 6am EST.