

Try it!



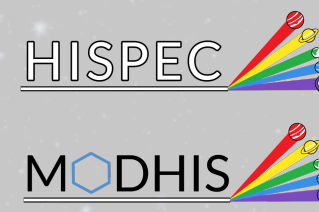
Web Platform for Calculations of SNR and Exposure Time with *Specsim* for *TMT-MODHIS* and *Keck-HISPEC*

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Input Panel

Object Panel

Observing Mode
Off-axis

Object Properties

On-axis Object Temperature (K) (200-12000)
7400

On-axis Object Magnitude (Vega)
5.383

Off-axis Object Temperature (K) (200-12000)
900

Off-axis Object Magnitude (Vega)
19.4

Vsini of Off-axis Object (km/s)
34.79

Angular Separation Between Objects (mas)
1743

Instrument/Atmosphere Panel

Filter for Object Magnitude Definition
Filter and Band
2mass-J

Instrument & Sky Setting
Mode of AO
auto

Atmospheric Conditions
Good

Zenith Angle (degrees)
30

PWV (mm) (1-50)
1.5

Filter: Filter for Object Magnitude

Supported Filters: 2mass-J, 2mass-K, 2mass-H

Mode of AO: Mode of Adaptive Optics System

Supported Filters for MODHIS: NGS, LGS_ON, LGS_OFF

Supported Filters for HARMONI: PyWFS_100H/J,

NGS_SH, LGS_STRAP, LGS_100H/J

Exposure Panel

1. Exposure Time Calculator Mode

Exposure Setting

Frame Exposure Time(s)

900

Target SNR

5

Goal CCF

200

2. SNR Calculator Mode

Exposure Setting

Exposure Time (s)

14400

Output

Off-axis mode for direct-imaging:

SNR for given exposure time
Exposure time for given SNR
CCF SNR for given exposure time
Exposure time for given CCF SNR
RV precision

On-axis mode:

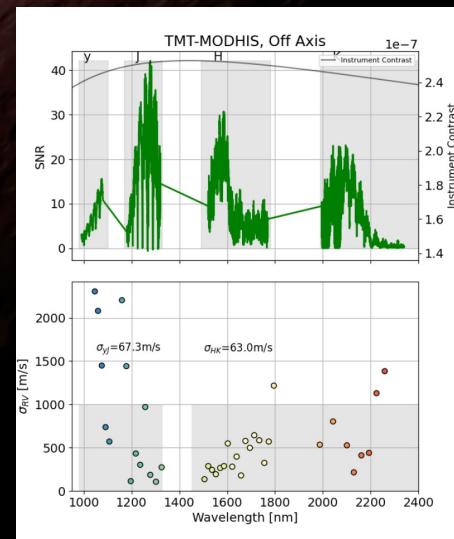
SNR for given exposure time
Exposure time for given SNR
RV precision

Example

Simulate observations of **HR 8799** and **HR 8799b** using **MODHIS**

Assume a 4-hour exposure time and good atmospheric conditions as well as 200 for goal CCF and 5 for target SNR

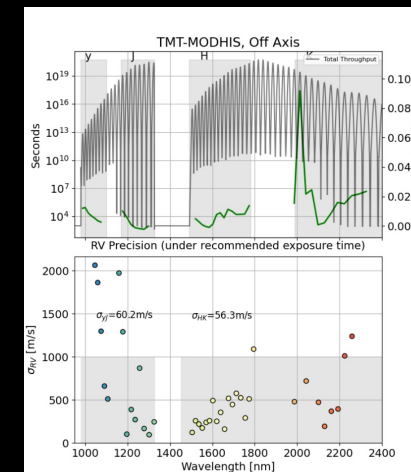
SNR (top) and RV precision (bottom)



CCF SNR

y Band CCF SNR:
41.28769828608694
J Band CCF SNR:
555.4727535251168
H Band CCF SNR:
429.9328626958118
K Band CCF SNR:
365.712914301043

Exposure time for SNR (top) and Target CCF (bottom)



Time for Target CCF (s):

215.95795207420096

Recommended Exposure Time Based on Target SNR (s):

17333.821962459406

Off-axis Observing Mode: High Contrast Imaging Mode

On-axis Observing Mode: Normal Imaging Mode

On-axis Object: Target Object (Planet)

Off-axis Object: Host Object of Target Object (Star)

For questions about the simulator or bug reporting, please contact Dr. Ashley Baker (abaker@caltech.edu) and/or Huihao Zhang (zhang.12043@osu.edu).