Informational Session on Minerva-Australis

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21 September 2022
Connection Information

- 1 hour information session
- Wednesday 21st September at 3pm US PDT = 6pm US EDT = 8am AEST (Thursday)
- Join the Zoom meeting [here](#)
  - Meeting ID: 821 5113 3478/Passcode: 333560
NN-Explore Observing Opportunities

- NASA and the National Science Foundation have established the NASA-NSF Exoplanet Observational Research (NN-Explore) partnership to support community exoplanet research
  - WIYN 3.5m: NEID, NESSI, WHIRC, Hydra, ODI
  - SMARTS 1.5m: CHIRON
  - Minerva-Australis 4x0.7m: PRV spectrograph/photometer
- Proposals for NN-Explore time submitted through NOIRLab (30 September 2022)
  - [https://noirlab.edu/science/observing-noirlab/proposals/nn-explore](https://noirlab.edu/science/observing-noirlab/proposals/nn-explore)
Informational Session: Minerva-Australis

• The goal of this session is to help the community learn about the capabilities of the Minerva-Australis array
• Presentation by Duncan Wright of University of Southern Queensland which runs the M-A array for the M-A science consortium and the NN-Explore time
• 300 hours per semester available to the US community for general exoplanet-related science
  • All data taken in queue mode
  • M-A will deliver raw data 1-d extracted spectra, and RVs
  • Data obtained for US community observers will be archived at NExScI –through the ExoFOP service.
• There are M-A collaboration targets listed that if you wish to observe with M-A, you need to collaborate with the M-A science collaboration
Other Resources

• Information at NExScI
  • https://nexsci.caltech.edu/missions/Minerva/

• Information at NOIRLab
  • https://noirlab.edu/science/observing-noirlab/proposals/nn-explore
And now ...

• here’s Duncan ...
MINERVA Australis
Mt Kent Observ­atory

- Located in South-East Queensland, Australia
- 151° E Lon. -28° Lat.
- Best weather May-Oct
- Current proposals due Sept 30 for period Feb - July
Minerva Australis Spectroscopy

- Fully robotic array of four 0.7m Planewave CDK700 telescopes
- High resolution R>80000, 484 – 627nm
- V<11.5
- Wavelength calibration is a simultaneous white-light back-lit iodine cell (separate fibre, not starlight-through system)
- Short period precision (<20d) on bright RV target <3m/s
  - e.g. tau Ceti 300s exposure
- Typical precision on a fainter or higher V_sini star can be <10m/s
Minerva Australis Spectroscopy

- Data is automatically reduced and RV’s obtained every few days
- Each telescope provides an independent spectrum

TOI2420
Teff=5700K
V = 11.57
60min exposures
V_sini < 5km/s

TOI2474 Teff=5000K V = 8.7
30min exposure V_sini < 5km/s
Minerva Australis Spectroscopy

- As your data is reduced you will receive an automated email
- Most TESS targets are $V>8$ and $V_{\text{rot}} \sin i > 5$ km/s
Minerva Australis Photometry

- Fully robotic array of four 0.7m Planewave CDK700 Alt-Az telescopes
- Multicolour photometry (ugriz, UVBRI soon)
- Current best photometric precision using no filter
- We are using Alt-Az telescopes at Nasmyth focus with a derotator-focuser
- Guiding includes RA, Dec and rotation correction using science images

TOI824b transit
Depth 1.49ppt
Minerva Australis Photometry

- Within a day or two of your data being taken we will reduce it and send you a summary email
- Different telescopes can observe different targets simultaneously
- Multiple filters, exposure times, telescope defocusing, other requests
Minerva Australis
NN-Explore Proposals

- Proposals for 2023A (Feb 1 – Jul 31 2023)
- Due 11:59pm MST on 30 September 2022
- Proposals should be submitted using the standard NSF NOIR Lab Observing Proposal Dashboard
- https://time-allocation.noirlab.edu/#/proposal/create/
- Select "NASA Exoplanet TAC" as the proposal type
- Select “MINERVA-A: MINERVA” in the telescope configuration

Questions: contact Duncan.Wright@usq.edu.au or Rob.Wittenmyer@usq.edu.au