



# Department Computing

Alex Dittmann

ASTR 695, Autumn 2021

# Types of resources

## People

Mark Wolfire, Kevin Rauch, Peter Teuben

## Wiki

<http://www.astro.umd.edu/cgi-bin/twiki/view/AstroUMD>

## Software

Dept. licenses (IDL, Mathematica, Matlab, etc.)

Astromake: simplified installation of common astro. software

e.g. ds9, pgplot

## Hardware

Yorp cluster

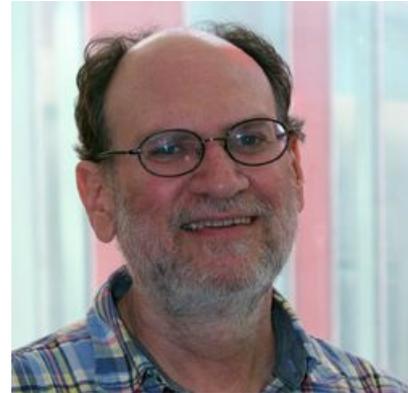
Deeptthought2, Deeptthought3/Zaratan

# People

- See Kevin (software) to get your astronomy account
- See Mark (hardware) for, e.g. laptop ethernet access
- Use [help@astro.umd.edu](mailto:help@astro.umd.edu) to contact both



Software  
From N-body  
dynamics to  
signal  
processing



Hardware  
ISM  
research

Certified  
wizard

# More people

- Peter Teuben:  
maintains the backup system +  
astromake, can help with Linux /Mac  
laptops.
- Derek Richardson:  
go-to for deepthought + bird stuff

## Astronomy Computing Committee:

Massimo Ricotti (Chair)

Olivia Dent

Alex Dittmann (Grad student rep.)

Marc Pound

Kevin Rauch

Anne Raugh

Xi Shao

Peter Teuben

Dennis Wellnitz

Mark Wolfire



If you have issues, concerns, and/or ideas related to computing in our department, please contact any member of the ACC. We'll be happy to hear from you!

# The astronomy twiki

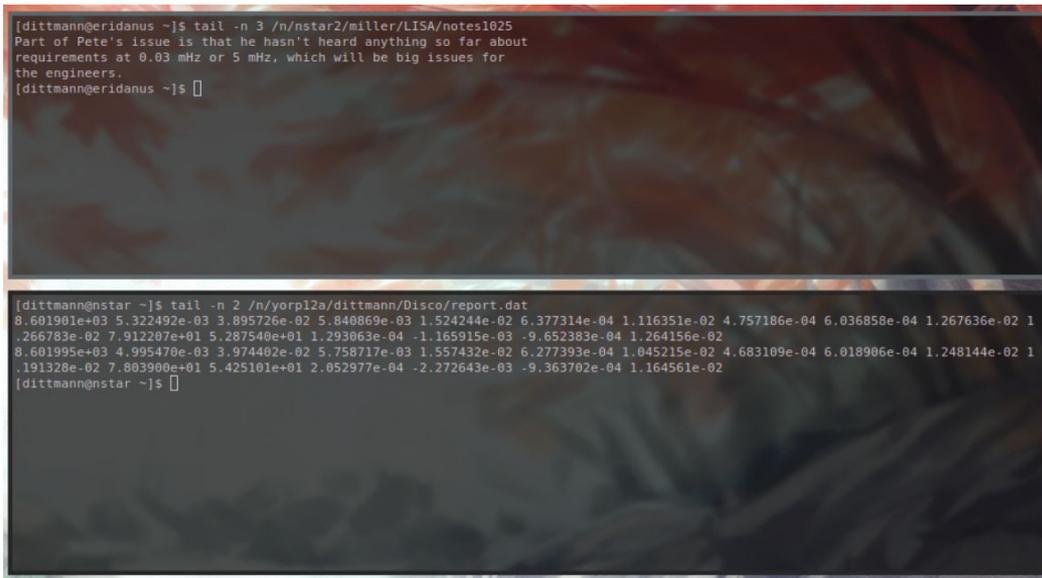
- General department resource
  - Warning: some pages are outdated
- Overview:  
<https://www.astro.umd.edu/twiki/bin/view/AstroUMD/OverView>
- Hardware:  
<https://www.astro.umd.edu/twiki/bin/view/AstroUMD/HardWare>
- Software:  
<https://www.astro.umd.edu/twiki/bin/view/AstroUMD/SoftWare>

# The astronomy network

- Most of the department computers are networked together
  - Can access files on any computer from any computer
  - Large collection of linux machines
- Can access network remotely through ssh
  - e.g. `ssh username@terra.astro.umd.edu`
- Starting mid-semester, need VPN for off-campus access
  - <https://terpware.umd.edu/Linux/Title/4010>

# The astronomy network

- Need an astronomy account to use
- Useful for sharing data with colleagues
- Remote/networked locations start with /n/
- Backed up regularly
- Dept. can provide a computer to students



```
[dittmann@eridanus ~]$ tail -n 3 /n/nstar2/miller/LISA/notes1025
Part of Pete's issue is that he hasn't heard anything so far about
requirements at 0.03 mHz or 5 mHz, which will be big issues for
the engineers.
[dittmann@eridanus ~]$
```

```
[dittmann@nstar ~]$ tail -n 2 /n/yorp12a/dittmann/Disco/report.dat
8.601901e+03 5.322492e-03 3.895726e-02 5.840869e-03 1.524244e-02 6.377314e-04 1.116351e-02 4.757186e-04 6.036858e-04 1.267636e-02 1
.266783e-02 7.912207e+01 5.287540e+01 1.293063e-04 -1.165915e-03 -9.652383e-04 1.264156e-02
8.601995e+03 4.995470e-03 3.974402e-02 5.758717e-03 1.557432e-02 6.277393e-04 1.045215e-02 4.683109e-04 6.018906e-04 1.248144e-02 1
.191328e-02 7.803900e+01 5.425101e+01 2.052977e-04 -2.272643e-03 -9.363702e-04 1.164561e-02
[dittmann@nstar ~]$
```

Top: accessing text files on Cole's computer (nstar) from mine (eridanus)

Bottom: accessing files on yorp from Cole's computer

# YORP

- Cluster of ~20 computers
- Can ssh in from the network
- Good for mid-sized jobs
- Reservation/honor system

name	nodes	cores	processor set per node	RAM	disk
yorp	1	8	Intel Xeon E5420 2.5 GHz (2CPU 4core)	8 GB	2 TB
yorp01-04	4	32	AMD Opteron 6380 2.5 GHz (2CPU 16core)	64 GB	1.5 TB
yorp05	1	12	Intel Xeon X5670 2.9 GHz (2CPU 6core)	24 GB	1 TB
yorp06-09	4	12	Intel Xeon X5670 2.9 GHz (2CPU 6core)	24 GB	4 TB
yorp10	1	24	AMD Opteron 6180 SE 2.5 GHz (2CPU 12core)	64 GB	2 TB
yorp11-17	7	32	AMD Opteron 6284 SE 2.7 GHz (2CPU 16core)	64 GB	2.3 TB
yorp18-20	3	32	AMD Opteron 6380 2.5 GHz (2CPU 16core)	64 GB	1.5 TB

```
[dittmann@eridanus data]$ ssh yorp
Please sign up for yorp time by editing /etc/motd
Indicate how many threads you want, and for what days.

!!! No computations should be run on the yorp queen. !!!

yorp01 [32 threads] - jdema      (7/1 - 8/30, 32 threads)
yorp02 [32 threads] - jdema      (7/1 - 8/30, 32 threads)
yorp03 [32 threads] - thuard     (7/16 - 7/30, 32 threads)
yorp04 [32 threads] - imholt     (8/10 - 9/30, 32 threads)
yorp05 [24 threads] - kleidig    (8/30 - 9/30, 24 threads)
yorp06 [24 threads] - hagrusa    (8/2 - 9/31, 24 threads)
yorp07 [24 threads] - hagrusa    (8/2 - 9/31, 24 threads)
yorp08 [24 threads] - hagrusa    (8/2 - 9/31, 24 threads)
yorp09 [24 threads] - imholt     (8/31 - 9/31, 24 threads)
yorp10 [24 threads] - imholt     (06/11 - 9/30, 24 threads)
yorp11 [32 threads] - dittmann   (8/31 - 9/30, 32 threads)
yorp12 [32 threads] - dittmann   (1/05 - 9/30, 32 threads)
yorp13 [32 threads] - dittmann   (5/18 - 9/30)
yorp14 [32 threads] - dittmann   (1/05 - 9/30, 32 threads)
yorp15 [32 threads] - OFFLINE/UNAVAILABLE
yorp16 [32 threads] - cosinga    (8/27-9/30, 32 threads)
yorp17 [32 threads] - gsryan    (12/09 - 8/31, 32 threads)
yorp18 [32 threads] - gsryan    (12/09 - 8/31, 32 threads)
yorp19 [32 threads] - anyamischel ( 7/1 - 8/1 , 32 threads)
yorp20 [32 threads] - gsryan    (4/20 - 8/31, 32 threads)

This machine runs the CentOS 8 operating system.
Report hardware/software issues to help@astro.umd.edu.
Last login: Wed Sep  1 13:24:56 2021 from 129.2.14.33
[dittmann@yorp ~]$
```

# Notable computers

- horizon:
  - ~4TB of RAID storage available per user (for now)
- Ima: 32 cores, lots of RAM
  - Primarily for big ALMA data analyses
  - I'm not sure about *general* use
- galileo/dynamics have GPUs
  - Ask Massimo for permission before using galileo

# University Clusters

- Use university/TerpConnect account
- Deepthought2
  - 9840 cores, to retire early next year
  - Department has ~1.2 million core hours each month
  - Use slack to coordinate usage
- Zaratan (the cluster formerly known as Deepthought3)
  - 33280-50000 cores, 80 GPUs
  - Dept. allocation TBD
- BlueCrab
  - write proposal for time
  - not too competitive



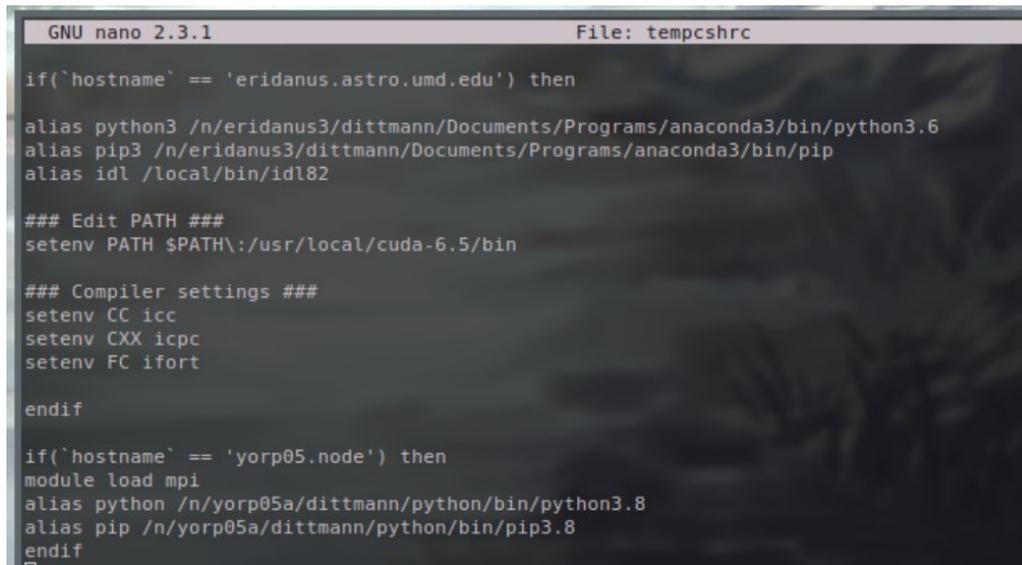
Until they make an actual logo

# General software notes

- No admin access on dept. Computers
- When installing from source, use `./configure --prefix=directory` where applicable
- With pip, use `pip install --user package` to install just for your account
- See <https://www.astro.umd.edu/twiki/bin/view/AstroUMD/SoftWare>

# Tips: (bash/csh)rc files

- Useful for setting up shortcuts
- Runs automatically on login
- Custom settings on different dept. computers



```
GNU nano 2.3.1 File: tempcshrc

if(`hostname` == `eridanus.astro.umd.edu`) then

alias python3 /n/eridanus3/dittmann/Documents/Programs/anaconda3/bin/python3.6
alias pip3 /n/eridanus3/dittmann/Documents/Programs/anaconda3/bin/pip
alias idl /local/bin/idl82

### Edit PATH ###
setenv PATH $PATH\:/usr/local/cuda-6.5/bin

### Compiler settings ###
setenv CC icc
setenv CXX icpc
setenv FC ifort

endif

if(`hostname` == `yorp05.node`) then
module load mpi
alias python /n/yorp05a/dittmann/python/bin/python3.8
alias pip /n/yorp05a/dittmann/python/bin/pip3.8
endif
```

An excerpt from my .cshrc file

# Tips: cloud storage

- UMD provides storage through Box and Google Drive
- Unlimited storage on drive
  - Collaboration, non-sensitive information
- Box currently offers unlimited storage
  - Will enforce (unspecified) limits starting July 2022



# Tips: websites



## Benjamin Hord's Astronomy Department Home Page



**Name:** Benjamin Hord  
**Title:** Graduate Student  
**Room:** PSC 1260  
**Phone:**  
**E-mail:** [benhord](mailto:benhord@astro.umd.edu)

Full e-mail address is constructed by adding [@astro.umd.edu](mailto:astro.umd.edu) to the **E-mail** entry.

Ben Hord is a third-year graduate student studying exoplanets. His research interests include the dynamical and formation history of hot Jupiters, exoplanet systems with unique architectures, the discovery, vetting, and validation of new exoplanets, as well as photometric light curve modeling and simulations. Ben is particularly interested in the intersection between Big Data and Astronomy and how large data sets can be used to answer astrophysical questions.

His departmental advisor is Professor Eliza Kempton and his research advisor is Dr. Knicole Colon at NASA Goddard Space Flight Center. Ben currently splits his time between the UMD College Park campus and the NASA Goddard Space Flight Center in nearby Greenbelt.

Ben has experience teaching as a TA for Astronomy 101 and with public outreach, including hosting Observatory Nights at the nearby UMD Observatory, giving research talks to local non-scientists, and more. His notable graduate awards include the Dean's Fellowship, Wentzel Fellowship, and NASA FINESST Award. He earned a BA in Astrophysics and a BA in History from Columbia University in 2018 and an MS in Astronomy from UMD in 2020. He is currently pursuing a PhD in Astronomy.

[ADS Listing for Benjamin Hord](#)

[Astro-PH Listing for Benjamin Hord](#)

Can host on the astro website

JP @  
UMCP  
Jongwon Park's home

PAGES  
RESEARCHES  
PAPERS  
SIMULATIONS

## WELCOME TO JONGWON'S HOME

### JONGWON PARK

I am a Ph.D. candidate in the Astronomy Department at the University of Maryland, College Park. I got my bachelor's and master's degree from Yonsei University in South Korea and worked on various topics of galaxy evolution with professor Sukyoung K. Yi. I moved to the University of Maryland in 2018 and have been working with professor Massimo Ricotti.

My research interest is the formation of Population III stars and their feedback. To study them, I make use of radiative hydrodynamics code RAMSES-RT and carry out computer simulations. My job includes implementing various physics (chemistry, radiative processes, etc.), performing simulations using a supercomputer, and understanding the results physically.

### CV

[CV](#)

### RESEARCH INTERESTS

- Formation of the First Stars and Galaxies
- Feedback Mechanisms of the First Stars

### PERSONAL HISTORY

- 2018.09 - Current: Graduate Student, University of Maryland, College Park
- 2017.03 - 2018.06: Post Master Researcher
- 2015.03 - 2017.02: M.S., Yonsei University
- 2008.08 - 2010.10: Military Service (Republic of Korea Air Force)
- 2008.03 - 2015.02: B.S., Yonsei University

### CONTACT INFORMATION

- [jwpark\(at\)umd\(dot\)edu](mailto:jwpark@umd.edu)

or link to a page hosted externally

# Tips: off-campus journal access

- Campus library has handy browser plugin:  
<https://lib.guides.umd.edu/c.php?g=436890&p=2978436>
- Can just do a web search for something like  
**umd library journal access**



## RESEARCH GUIDES

[UMD Libraries](#) / [Research Guides](#) / [Subject Guides](#) / [Second Language Acquisition](#) / [Off Campus Access to E-Journals](#)

### Second Language Acquisition

This is a guide to selected sources for research in second language acquisitions. For additional information consult the subject librarian, Lindsay Inge Carpenter at [linge@umd.edu](mailto:linge@umd.edu)

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Citing & Preparing Annotated Bibliography

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Doing research off-campus? Try out the UMD Libraries reload button! Add the button to your browser's bookmark toolbar (see instructions below), and whenever you come across a journal you think you should be able to access, click the button to reload the page through the UMD Libraries proxy.



#### Firefox:

Drag the button to the bookmarks toolbar or right click and select the "Bookmark This Link" option.

#### Chrome or Safari:

Drag the button to the bookmarks toolbar. If the bookmarks toolbar isn't visible, press Ctrl + Shift + B (in Chrome).

#### Internet Explorer:

Right click the button and choose the "Add to favorites..." option. You may get a warning about adding unsafe links. While it's good practice to be wary, we believe this link is safe.

**\*Note:** Reloading the page through the proxy still won't give you access if it's a resource we don't subscribe to. To verify access, look up the journal in [Journal finder](#).

# Thanks for listening

- Questions?
- Demo requests?