Summer Presentations

Visibility in Physics
Week 7
01
CUWiP
If you applied to CUWiP, please fill out the form in the weekly email!

02
118/119 Drop in Hours
Wednesdays
7-9 PM
Phillips Hall 277

03
Google Calendar
bit.ly/ViPCal

04
Physics Slack
bit.ly/PHYSlack
What are your best/favorite studying techniques?

How do you relax/destress during midterm season?
my summer:
CS internship
Study Abroad

Not just for liberal arts majors!
CS Internship
Vanguard
Site Reliability and Security Intern
**Internship Application: Fall Timeline**

- **AUG**
  - Start finding opportunities through Handshake, career fairs, LinkedIn, friends

- **SEP**
  - Phone interviews and coding challenges

- **OCT**
  - Technical Interviews
  - Behavioral Interviews

- **NOV**
  - Decisions! You’ll typically hear in 1-3 weeks after last interview

- **DEC**
  - Start applying! Usually just resume stuff, sometimes essays
It may sound silly, but having experience in the corporate world is a very marketable skill.

Internships are usually programs of many interns, so it is likely you will be living/hanging out with other interns.
So, what did I actually do?

**Learning**
Getting up to speed with the tools used, where the team is, where are they going...

**Intern Project**
Optional, web-development project led by interns.

**AppDynamics**
Collaborated with third-party vendors to manage tool's efficiency.

**Networking**
Company sponsored events and people you meet daily.
In conclusion

Internships are a great way to gain industry experience and to improve your resume. With a little bit of effort, they are easier to get than you think.
ELLA
elcastel@live.unc.edu
Summer 2019

- Dark matter halos
- Proto-group
- Galaxies and halos come together over time
- Merged dark matter halos
- Small Settled Group

Graph showing number of groups vs diameter of group (Mpc):
- Proto-groups
- Small Settled Groups
- Diameter of Local Group
- FoF Linking Length

Histogram showing relative number of groups:
- Proto-groups
- Small Settled Groups

K-S p-value: 0.629 → distributions are the same!
ERIRA & Cassiopeia A

Madyson Barber
ERIRA??

Educational Research in Radio Astronomy

Run by Dr. Dan Reichart

One week at the Greenbank Observatory in West Virginia

Free program!

Meet other STEM majors from across the country and connect with other students from UNC!

Apply online starting in February(??)

https://www.danreichart.com/erira/
Cassiopeia A (Cas A)

- A very young supernova remnant (330 yrs old)
- The brightest extrasolar radio source in the sky
- 11,000 light years away from Earth
- Radius of 6 light years
The Dilemma

These images show the flux density for Cas A over time.

We wanted to collect data that further illustrated Cas A’s odd behavior, and explore ideas of what might have caused it.
40ft Telescope Data

In order to find the flux of Cas, we needed to clean up the original signal we received.
Using 20m Data

After retrieving data from Skynet, we used DS9 to analyze the images.

We collected data on the relative intensities of Cass A and Cyg A in order to use Trotter’s method for resolving the relative intensities.
Converting Trotter’s Method to Code

\[ F_s(\theta) = \left\{ \sum_{n=1}^{N} a_n \cos \left[ \frac{2\pi n (\theta - \theta_0)}{u_\theta} \right] \right\}^2. \]

\[ F_m \equiv F_s(\theta_0) = \left( \sum_{n=1}^{N} a_n \right)^2. \]

\[ I_m \equiv \frac{1}{F_m} \int_{\theta_0 - \Delta \theta}^{\theta_0 + \Delta \theta} F_s(\theta) \, d\theta. \]
Weighted Linear Regression Model

x: time (years)
y: log(ratio Cass:Cyg)
s: error

Slope and y-int of best fit line
Scatter Plot of data
Comparing to Accepted Values

Calculated slope: -0.0119
Calculated y-int: 0.2773
Calculated percent fade: 1.19% per yr

Accepted slope: -0.0080 ± 0.0002
Accepted y-int: 0.2722 ± 0.002
Accepted percent fade: 0.8% per yr
Madeline’s Summers
2019: Earth Sciences at Volcanic Islands REU

Link to REU website: https://www.soest.hawaii.edu/EarthScience-reu/
2019: My research!
2017: Camp counselor + living at home

2018: IDEA + taking classes

Link to IDEA website: https://ie.unc.edu/idea-undergraduate/
05

SCHUYLER
mschuym@live.unc.edu
World Wide Organization of Organic Farmers: France

- Worked on a vegetable farm in a small village in France for 5 weeks
- Wanted to live in another country
- Wanted to speak French regularly (immersion doesn’t always happen in UNC Study Abroad programs)
- Got to read and hike a lot
- WWOOFing is a great way to travel around cheaply: room and board is exchanged for work
Hiked to highest peak in Les Bauges (mountain region where I lived). We could see the peak of Mt. Blanc.
Some of the beehives on the farm (32 total)
I lived less than 2 hrs from Geneva, so I got to visit CERN.
Summer REU at the University of Delaware School of Marine Science and Policy

- Got to do research in a completely new field
  - Studied sea spray
  - Did experimental research
  - I am going to a conference to present on my project
- Learned a lot about different types of marine science
- Gained valuable experience giving different types of presentations (proposal, data, final)
Experimental setup: Wave Tank
Experimental setup: Imaging Location
Intern friends :)

THANK you INTERNS
GOOD LUCK!

Best of luck with the rest of midterm season! We are so close to Fall Break! You can do it :)