





# QuarkNet 2020 - Vanderbilt University

## 22-26 June 2020

### Welcome!

Zoom ([zoom.us](https://zoom.us)) meeting 9am to 12:10pm each day.

The week in a nutshell:

**Monday Morning**, news and talks

**Tuesday Morning**, talks

**Wednesday Morning**, Cosmic Ray Muon Detector from the lab

**Thursday Morning**, neutrinos workshop (with Ken Cecire)

**Friday Morning**, neutrinos, online teaching discussion, paperwork

**All Online! on Zoom**, coordinates Meeting ID: 999 1401 8433,

Password: 937318      [Zoom Link w/PW](#)

# Administration

- Check-ins around the “room.”
- Keep your attendance and send me a signed letter.
- Some may need the IRS W-9 form and ACH bank direct deposit form needed to process your stipend.
- We have **two** working sets of cosmic ray muon detectors (CRMDs) and have laptops for datataking and control. We have a **third** set with non-standard (small) scintillator paddles good for shielding experiments.
- We use the “standard” Java program *Equip* to control the boards/detectors.
- Registration and Survey for QuarkNet Central, links on the [must-do-items](#) page.
- Putting talks and data sets at [GitHub Vanderbilt-QuarkNet Workshop 2020](#)



## news and talks

# Monday Schedule

9:00-10:00am Bill Gabella talk, administration and news

10:00-10:10am Break

10:10-11:10am Will Johns

11:10-12:10pm Steve Taylor



# Tuesday Schedule

## Talks

9:00-10:00am Karan Jani

10:00-10:10am Break

10:10-11:10am Brenda Fabela

11:10-12:10pm Vicki Greene





# Wednesday Schedule

**Cosmic Ray Muon Detector, follow the signal and hardware**

9:00am-12:10pm Bill in the 9<sup>th</sup> Floor lap running around, following direction, measuring whatever can be measured, some data to look at too.



# Thursday Schedule

## Neutrino Workshop

9:00am-12:00pm Neutrino Workshop with Ken Cecire, [QuarkNet Page](#)



# Friday Schedule

## Neutrino Workshop

9:00am-12:10pm Neutrino Workshop, see link previous page



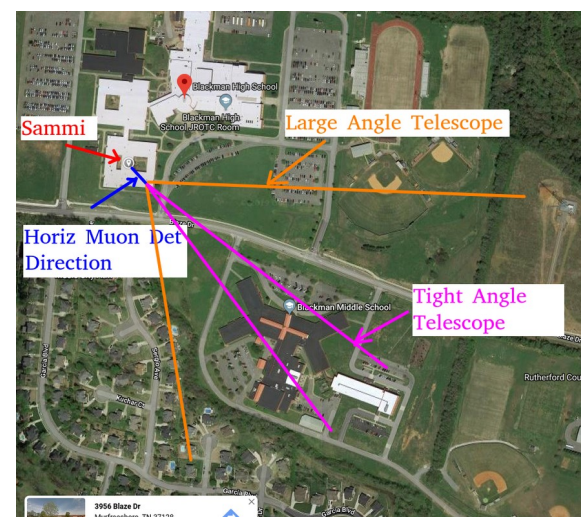
# News

## Congratulations to Kim Baumann, Blackman HS, and her student Sammi H.!

Sammi used the CRMDs for a semester long capstone plus. Included a talk the School for Science and Math at Vanderbilt (SSMV in the Center for Science Outreach). He investigated using the cosmic ray muons for muography---seeing inside objects for high dense regions by muon attenuation. Very hard with our CRMDs...could maybe see a bridge overpass vs open sky, but without tracking trajectories takes a lot of data.



Looking for buildings vs open field





# Useful Links for This Workshop

- CRMD User Manual  
<https://github.com/gabella/VandyQuarkNet/tree/master/manuals>
- Vanderbilt QuarkNet “Drupal” group page:  
<http://quarknet.i2u2.org/group/vanderbilt-university-quarknet-center>
- QuarkNet Virtual Neutrinos at Vanderbilt by Ken Cecire:  
<https://quarknet.org/content/virtual-neutrino-workshop-vanderbilt>
- QuarkNet Virtual Neutrino template:  
<https://quarknet.org/content/virtual-neutrino-workshop-template-2020>
- QuarkNet Virtual Neutrino UofF page:  
<https://quarknet.org/content/neutrino-data-workshop-prototype-uf>

# Useful Links

- Vanderbilt QuarkNet Site:  
<http://www.hep.vanderbilt.edu/~gabellwe/qnweb/>
- Vanderbilt QuarkNet “Drupal” group page:  
<http://quarknet.i2u2.org/group/vanderbilt-university-quarknet-center>
- Vanderbilt QuarkNet Workshop 2018 page:  
<https://quarknet.i2u2.org/content/vanderbilt-quarknet-worskhop-2018>
- QuarkNet Cosmic Ray eLab Teacher page:  
<http://www.i2u2.org/elab/cosmic/teacher/>
- QuarkNet CMS eLab page:  
<http://www.i2u2.org/elab/cms/home/project.jsp>
- QuarkNet LIGO eLab Page:  
<https://www.i2u2.org/elab/ligo/teacher/>
- 2017 Marla Glover’s CMS Open Data Page:  
<http://quarknet.i2u2.org/content/vanderbilt-cms-data-agenda>
- 2016 Ken Cecire's LIGO eLab page:  
<https://quarknet.i2u2.org/content/ligo-e-lab-workshop-vanderbilt>