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# DANGO (Doings and Goings On) - Vol. 22 | Issue 4

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## DANGO (Doings and Goings On)

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**Picture of the Week Winner:** “Mobbed by tickling birds.” -Matthew



### Group Updates

**BROOKHAVEN**  
NATIONAL LABORATORY

*FROM CECILY TOWELL:*

Adonde Dango,

This week has been a bitter sweet one since Tuesday was my last day ever to be on shift for PHENIX, may it rise again.

Since then we've been learning about what we'll be doing for the rest of the summer, which is mainly building and testing different prototype mRPCs (multi Gap Resistive Plate Chambers). These are PID (particle identification) detectors that are instrumental in experiments like PHENIX. The goal is to get these guys down to a timing resolution of 10ps so that they can be put into a PHENIX upgrade like super PHENIX. On Wednesday and Thursday we mostly sat through lectures about what we're doing and the big physics questions

we'll be addressing. Today I started taking apart a failed mRPC prototype, and will now work on reassembling it with different materials. As to my side project, I did catch a groundhog, though my colleagues do not support that claim. Perhaps it would be more accurate to say that I tripped over it in the midst of pursuit. Regardless, progress has been made.

Voy a coger la marmot,  
Cecily

*FROM HALEY STIEN:*

Dearest Dango,

This week we began our work with Mickey Chiu, a scientist here at BNL. The first couple of days consisted of lectures and introducing us to the kind of work we will be doing. Matthew and I will be studying the electronics part of the whole mRPC project while Cecily and Aric will be building and testing an mRPC that uses Mylar instead of glass. However, it looks like Matt and I's project will have to wait until next week because we start another week of shifts on Tuesday. Aside from work, not much going on here! We planned on going to the beach today, but the wind was so crazy that we gave up on that idea and have had a relaxing evening watching the Office instead. In other news, we are making more and more progress on our groundhog hunt and have also taken up golf as a pastime.

-Haley

*FROM MATTHEW KIMBALL:*

Hey-o DANGO,

This last week has been a good one, we finished off our 8am to 12pm shift and I can honestly say that I preferred the 12am to 8am shift. After that we started working with Mickey and I have been assigned the summer project of "electronics". Along with Haley, we will be responsible for measuring the bandwidth of all the electronics Mickey or Aric or Cecily want to put into the mRPCs in order to minimize interference with the data collected. This job has been relatively easy and boring so far (I've just been plugging and chugging with a sine wave generator and an oscilloscope) but I'm looking forward to working on this over the summer.

Later DANGO,  
Matthew Kimball

*FROM ARIC TATE:*

Hello Everyone,

This week I drove to Brookhaven and began my work with the others who just finished a shift. We have just begun working with mRPCs (multi-gap resistive plate chambers) and have also started a bandwidth study to help determine if the readout electronics are adequate. My summer's work looks to be centered around the building and testing of a mylar mRPC as well as some analysis of data collected using a 3D printed mRPC from

UIUC (University of Illinois Urbana-Champaign).

- Aric

*FROM DR. RUSTY TOWELL:*

Hello Dango,

This week started and (hopefully) will end with me at BNL. On Monday and Tuesday I attended the Spin Workshop that is part of the RHIC/AGS Users Meeting and worked on my talk for the conference I'm traveling home from now. On Wednesday I traveled to Nashville and attended the first day of the Christian Scholars Conference at Lipscomb University. On Thursday I gave my talk titled "Advancing Molten Salt Reactor Technology to meet the Needs of the World". Unlike most conferences I attend, this conference has a very very broad range of talks, however there was a nice series of talks delivered by and for STEM folks. It was neat to hear about how other Christian universities were conducting engineering focused mission trips to third world countries. I hope this is something we can start at ACU soon. My talk focused on the new NEXT lab at ACU. If you don't know what that is, check out the website: [acunextlab.org](http://acunextlab.org).

Grace and Peace,  
Rusty



**Enprotec / Hibbs & Todd**

*FROM VICENTE ROJAS:*

There is no precedent as to what happened in Cisco, TX last week. You probably heard about the highway washing away, but the aftermath of the water treatment plant (WTP) was shocking. The WTP flooded at least 6 ft. It was a complete loss. The city did not have running water for hours. Given that the City of Cisco is one of many eHT's clients, my bosses had to rush there to try to fix the problem. On Wednesday, I got the opportunity to visit what used to be the WTP with a couple of eHT engineers. As we pulled up to the site, I was surprised to see all structures still standing. I was surprised when I saw algae hanging from utility poles that carry electricity wires. That is how high the water level was at one point!

Days prior to the flood, the rain caused Lake Cisco to exceed its 100% capacity. The WTP was located in between the dam and Highway 6. Once the water started overflowing the dam, Highway 6 blocked its natural course. The water started to accumulate in this area and eventually flooded the WTP. Once the water finally made its way across the highway and the WTP dried out, dead fish were found all over the facility.

In order to get water back into the city's distribution system, a mobile WTP trailer was hired. This unit can supply one million gallons per day (mgd). Several adjustments are being made to the unit to increase its water supply. Even though the immediate water needs of the City of Cisco are being met, it has been declared under an emergency state. It is ironic how the excess water/rain can leave a city without water.

I have spent the rest of the week at the office reading reports, collaborating with other engineers, and eating donuts. One of the perks of working at eHT is that they have donuts every Friday. I have bonded with Daniel, the other intern from Texas Tech, pretty good. We have been going to ACU's recreational center to play basketball and soccer a couple of times.

Lastly, I successfully completed my driver's test and got my license.

-Vicente



*FROM ZHAOJIA XI:*

Hello Dango,

I am still working on hodoscope efficiency this week and I am getting a lot better at understanding Fortran code. My supervisor Dr. Chen left on Tuesday morning, so I asked him a lot of questions about this project on Monday before he left. I finished

programming on Wednesday, Dr. Chen and I keep communicating through emails. He gave me some very nice suggestions about how to improve my code yesterday. Now I am doing my best to write better code, add more functions and more arrays. On Thursday, everyone was invited to our spokesperson Paul Reimer's house. The cookout was great, we all had a very good time there. We got to know our spokesperson better and had a chance to pet his giant dog (Becky). This week has been fun and eventful. I feel blessed to work here.

Have a great summer,  
Zhaojia(Tiffany) Xi

*FROM CALEB HICKS:*

<Generic Salutation>,

This week I started working on the dark photons research. I'm helping to convert the Monte Carlo data into a format that our tracking software can understand. Mostly I've just been looking over lots of code and writing down the data members for all the different classes. I was hoping that they would line up nicely and I could just copy them over one-to-one, but it looks like I won't be able to do that. Other than that I haven't really done much this week, just the usual learning about hardware and nuclear physics.

<Generic Send-off>,

Caleb Hicks

*FROM JOSHUA MARTINEZ:*

Wassup DANGO,

This week was far more eventful (and tiring) than last week. Monday I was thrown in head first into learning programming which is a lot to learn in order to be able to do what I'm supposed to. So I have been trying to catch up on programming even though I've only owned my own computer for almost two weeks. Tuesday was the beginning of the Undergraduate talks here at Fermilab so we attend that as I continued my endeavor to absorb all the knowledge of programming I need. Wednesday I was on shift and had had some slight trouble but was handled properly. Thursday was exciting as I finally found out what my project is going to be specifically. Friday (today) we had a meeting to establish who is taking what shifts and made a schedule for ourselves the next two weeks. All in all this week was rather fun and I look forward to the weeks to come.

Sincerely,

Joshua Daniel Martinez

*FROM PAUL CARSTENS:*

Greetings and salutations!

The summer is starting to pick up speed now that we've been assigned our projects. I still don't have one cohesive task, but I do know that I'll be working on jTracker. This week Reuben and I have been working on some mass comparison plots using jTracker on montecarlo data to

find the optimal settings for the fmag and kmag pt kicks.

In other news the undergrad lectures have started up. So every Tuesday and Thursday we attend those. We've attended the first two lectures thus far. Lecture one was an introduction to fermi lab given by the director and the second lecture was a quantitative look at accelerator physics.

My week's been cut short a day as my family has arrived for a vacation, so for my long weekend I'll be in Chicago visiting the attractions and eating pizza.

Ready for deep dish,

Paul Carstens

*FROM REUBEN BYRD:*

Hey dango,

This week we started working on our respective projects. I ran sqerp on a Monte Carlo reconstruction while adjusting the fmag and kmag "ptkick" constants. This is all in the goal to find the problem with the mass offset in the dimuons. Paul has been running similar tests as well. This week Fermilab started an undergrad lecture series, so we attended two lectures this week. One was a general lecture about Fermilab, but the second one was really interesting I thought. It talked about the physics of building and running accelerators. On Monday we'll continue with the models until we find the optimal ptkick settings for the correct mass.

'til next week,  
Reuben

*FROM DR. MIKE DAUGHERITY:*

Greetings DANGOers,

You probably knew that a *septum* is the thin wall of tissue that separates your nostrils. You probably didn't know that a septum is also a term for beam splitters. (If the beam is coming out your nostrils and your nose was sitting at high voltage, then the septum would be a row of grounded wires.) Fermilab septum MI-52b is part of the contraption that sends beam from the Main Injector to SeaQuest, and it happened to break while I was on shift over the weekend. We also had a fun issue with a faulty flammable gas detector causing miscommunication with safety inspectors. Lupe is still working hard. On top of data taking we've all be gaining XP in our analysis projects.

But most importantly, my family arrived on Wednesday. Beth now has to get a chest xray before every flight—it's just part of living with a serious lung disease. We were all pretty nervous about the trip but everything was fine. Life will be much better now that they are here.

Farewell,  
Dr. D

*FROM DR. DONALD ISENHOWER:*

Dango Land report from Dr. I. the elder,

The LeCroy High Voltage system I put in last week is still working fine, so that is a relief. But now I am trying to get more than just one complete spare system. The low voltage module is becoming more enigmatic the more I work on it. I at first thought it was so big because it put out a large current. I then realized it was putting out at most 5 Amps or so, which made me think that they were just worried about it being extremely stable. Now after studying the thing more carefully I have realized that the maximum current it's output transistors can drive is about 250 mA and the final output is controlled by a Regulating Pulse Width Modulator which usually has a larger ripple voltage on it, so I trying to figure out why the company built such a complicated +/-15 and +5 supply and then generated the final output this way. So this remains my main challenge here at FNAL.

Yesterday I saw my wife off to Brighton, MI which is where my son-in-law preaches, but primarily, it is where we have our other grandson (1 year old). So I will be on my own for two weeks. We also moved out of the FNAL apartment and into an extended stay hotel that has an arrangement with Fermilab since Beth Daugherity arrived. It's not cheap, but cheaper than renting an apartment and then leaving it empty for the bulk of the summer!

On Monday at our collaboration meeting I will be giving the overview and status of the SeaQuest experiment, so I



shall go back to preparing that talk!

Dr. I.

## In Other News..

### A note from our Engineering Librarian:

*DANGO Now on the Digital Commons!  
Miss an issue of DANGO? Not to worry, the library is now archiving issues of DANGO on their Digital Commons. I will be uploading them as they come out, and will also be uploading the E&P Newsletter starting this upcoming term!*

<http://digitalcommons.acu.edu/dango/>

*-Your Librarian, Jasmine Hoover*

### Highlighting young PHENIXians:

*“The success of PHENIX now and in the future critically depends on the hard work of the young people in the collaboration. We are continuing the monthly tradition of recognizing the work of these PHENIXians. This month, we highlight the work of Dmitry Kotov (PNPI and PSPbPU) and Cecily Towell (Abilene Christian University). The web pages (linked below) highlight their work, their backgrounds, and even some of their non-physics interests. We hope that this would help us learn more about our collaborators.”*

This is ACU’s first highlighted student and also the first time PHENIX has highlighted an undergraduate student.  
Congratulations, Cecily!!

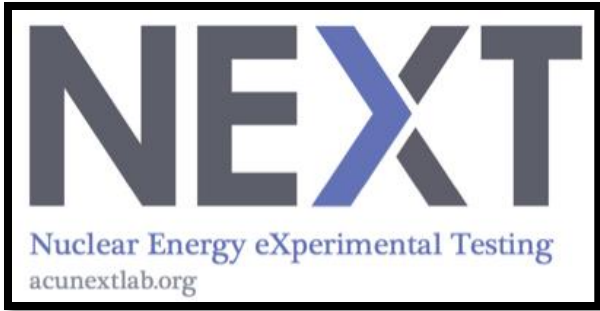
[http://www.phenix.bnl.gov/WWW/pub/awards/html/towell\\_cecily.html](http://www.phenix.bnl.gov/WWW/pub/awards/html/towell_cecily.html)

## Picture of the week candidates

Zhaojia: “Senior scientist Chuck Brown's 75th birthday”



Dr.Towell: “The Department of Engineering and Physics’ most recent new research effort: NEXT Lab at ACU”



Haley: "Highlight of my week"



## Coffee of the Week!

None ☹️

