Welcome back to Berkeley!

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September 18, 2019

You are in earthquake country!

Drop down on the floor.

Cover under a sturdy desk, table or other furniture. In an auditorium, cover your head with your arms and get between rows of chairs.

Hold on and be prepared to move with the furniture

Evacuate to the assembly area (in the front parking lot).
Follow Directions from the building emergency team.

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Things to know about LBNL

Traffic Safety

- Speed limit is 15 mph
- Follow traffic and parking signs

Pedestrian Safety

- Stay on the sidewalk
- Cross at crosswalks

Smoking Policy

- The Lab provides ash cans in a few outdoor designated smoking areas

We also have other critters

But you are unlikely to see any of them

(except for turkeys)

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Logistics for this meeting

- Indico page with the talks:

  https://conferences.lbl.gov/event/239/

  please upload your slides, or ask Miguel to help

- Video and audio connection using zoom

- Coffee breaks and lunch will be provided

  Thank you, UC!

- No dinner arranged for tonight

  Many POETIC participants are already here

Financial logistics for the Consortium

- All campuses should have our money

  any problems?

- Does everyone have students on board?

  I was able to swap some grad $ for undergrad

- UCB Research Administrator is Ms. Ying Zhang

- Start date was retroactive to January 1, 2019

- Meeting support

  each campus received travel funds

  we received meeting support funds

  will labs be able to participate in SoCal meeting?

Finances for the National Lab groups

- Successful competition to seed the consortium is considered an achievement at the labs

- Possible strategy: use MRPI success to support request for LDRD while we are in "seed" period (2019 and 2020)

    LANL was successful, right?

    LBNL has a plan, to begin in FY20 (early, I hope)

    LLNL participation secured?

MRPI Reporting requirements

- Lead PI is responsible for coordinating with Co-PI's

- Need coordinated submission of annual progress and final reports

- Annual progress and financial reports must be submitted to UC Research Initiatives at RGPOGGrants@ucop.edu

- On or before Nov. 30 of each year, unless otherwise instructed

- Instructions for completing and submitting reporting forms will be provided at a future date

- "If you don't receive instructions, it is your responsibility to contact our office and request guidance"

- I have heard nothing so far!

- I propose to request guidance at the beginning of November. OK?

Last time we said:

- **Set simulation goals for each campus**
  - How do each unit's goals fit into the whole?

- **Articulate how the whole is > sum of the parts**
  - How the work benefits from the consortium
  - How the studies we start now bring us into the detector development business
  - How we come into the broader community as a big group (instead of a loose confederation of small groups)

- **Define success for the consortium over the next 2 years**
  - What metrics will use to measure progress toward that
  - Report to UCOP, as required
  - Presentations at workshops, conferences; publications?

Advertising our consortium & output

- Time to seek speaking opportunities as a consortium?
  - Become visible as a consortium
  - Reports on pooled results more impactful
  - Help to get us "on the EIC map"
  - Let's plan at the end of today

- Venues of interest
  - Conferences: POETIC, DIS, Moriond, APS GHP, Lepton-Photon, PANIC, etc.
  - Users group: EICUG, others: RHIC, Jlab Users' Groups, where else?
  - Workshops...

UC Berkeley

Group members active on EIC

Miguel Arratia

Ezra Lesser, possibly Dhruv Dixit

Jose Soria

Youqi Song

Barbara Jacak

New undergrad students...

Will recruit new postdoc & new grad student this year

Expand close collaboration with

Ernst Sichtermann, Yue Shi Lai from LBNL

UCB Goals for MRPI

- Simulate jet production and reconstruction

- Aim to specify

  - tracking requirements

  - Jet reconstruction also implies requirements on calorimetry performance and design

  - Required statistics (will affect run time and triggering requirements)

  - *What it takes to make 1% precision measurements?*

- Use physics-driven performance specs and connect with detector technology R&D

- *Collaborate with LBNL on tracker design*

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Approach

- **Focus on jet probes of cold, dense matter**

  - Begin with kinematics studies

  - Identify struck quark in DIS as our probe

  - Characterize jets from the struck quark

- **Interesting Measurements:**

  - Jet yields & spectra in e+p & e+A

  - Energy balance, opening angle to get q-hat

  - Jet fragmentation functions & modification

  - Jet substructure & modifications in cold QCD matter

- **Begin with particle level from PYTHIA**

  - Next add effects of detector response

Phys. Rev. Lett. **122**, 192003
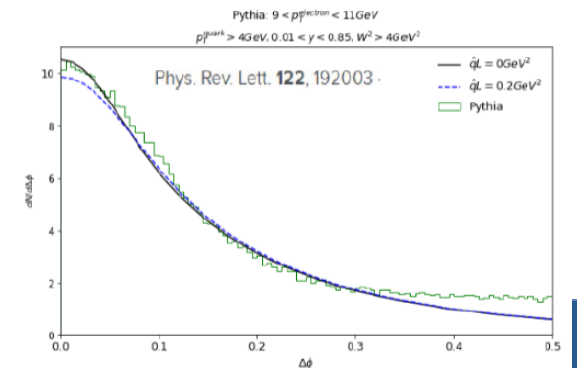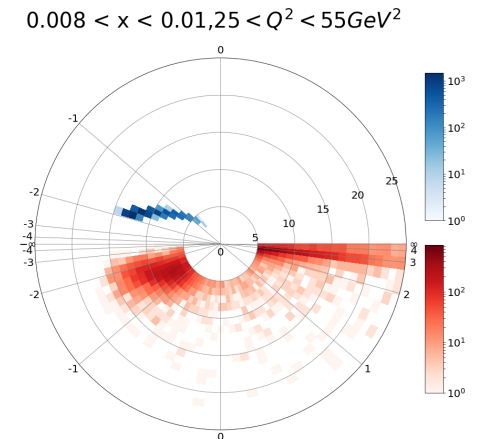
Results

In February, we had first results on particle multiplicities and where the jets go

Now

- How to connect jet with struck quark & separate the beam remnant; where the jets go (Youqi Song)

- x range accessible & Q^2 required (Youqi Song)

- Nature of the jets & jets vs. single hadrons (Youqi Song)

- Physics accessible, statistics & systematics needed (Miguel Arratia)

- Jet correlations with scattered electron (tag the photon); what reference frame to use (Miguel Arratia)

Next steps

- Simulate effects of tracking detector response
  - Reconstruction precision of scattered electron
    - How well we tag the struck quark
  - Effects of tracking efficiency & resolution on jet reconstruction & jet energy scale
  - Optimize tracker barrel/endcap arrangement based on where the jets go

- Calorimetry requirements for jet trigger & reconstruction
  - + measurement of scattered electron energy

Next steps, continued

- How well can we measure substructure variables?

- What detector hardware R&D is needed?

- What to copy & what to develop for silicon pixels?

- How to utilize timing information.

Address these in collaboration with LBNL.

Figure out how best to use the technical infrastructure of the 3 labs for tracker development (detector hardware development & computing)

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