Spectrometers
Enge Split-pole Spectrographs in North America

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(with slides from Catherine Deibel)

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August 21, 2015
How it was...

Yale

• Focalplane detectors
  ▶ Position (magnetic rigidity)
  ▶ Energy loss
  ▶ Residual energy

Si array:

TUNL

• Proton energy
• Position
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- Energy loss
- Residual energy
- Si array:
  - Proton energy
  - Position

Yale
Yale’s Wright Laboratory says goodbye to bunker mentality

(Melanie Stengel - New Haven Register) Professor Karsten Heeger, the Yale physicist who directs Wright Lab (L), and Jeff Ashenfelter, associate director of operations, by the atom smasher that will be removed as part of renovating, and repurposing the facility. 3/18
The Yale Enge Split-pole at FSU

- Yale Enge Split-Pole Spectrograph to be installed in experimental hall at John D. Fox Accelerator Laboratory

- New detector systems:
  - Improved focal-plane detector
  - New Si detector array for charged-particle decay
    - SABRE (Silicon Array for Branching Ratio Experiments)
    - Lower energy threshold
    - Larger angular coverage
But then...

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✓ Disassembly of magnet and associated equipment and shipment to FSU
  ▶ November 2013

● Detector development at LSU: Fall 2014 – Fall 2016

● Preparation of FSU experimental hall
  ✓ Rearrange FSU hall (Spring/Summer 2015)
  ▶ Pour concrete pedestal (Fall 2015)

● Installation of Magnet and detectors at FSU
  ▶ Spring – Winter 2016

● First experiments with split-pole at FSU
  ▶ Spring 2017

● Far future ideas
  ▶ Gamma detection
  ▶ gas-filled mode

Funded by a NSF MRI
FSU: I. Wiedenhoever, P. Cottle
LSU: C. M. Deibel, J. C. Blackmon
The TUNL Enge Split-pole at TUNL

- **Upgrades:**
  - ✓ Re-establish beamlines
  - ✓ Re-build focalplane detector
  - ✓ Beam on target
    - ▶ New control system (EPICS)
    - ▶ New DAQ (MIDAS)

- **Expect science this fall**

- **Future:**
  - ▶ $\gamma$-ray coincidences (underway)
  - ▶ Digital-traditional DAQ (underway)