

# New Testing Resources

Gary Varner

Some resources in Hawaii

Experience from developing integrated  
readout systems

6-OCT-2010 Electronics GPC Review

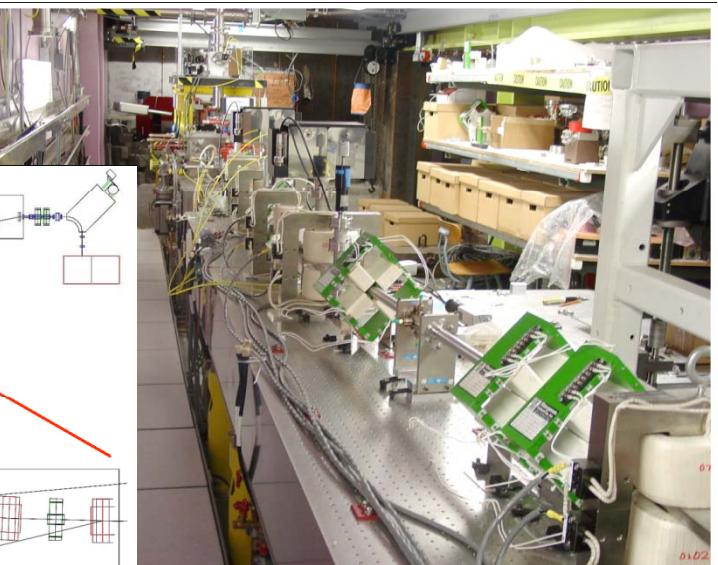
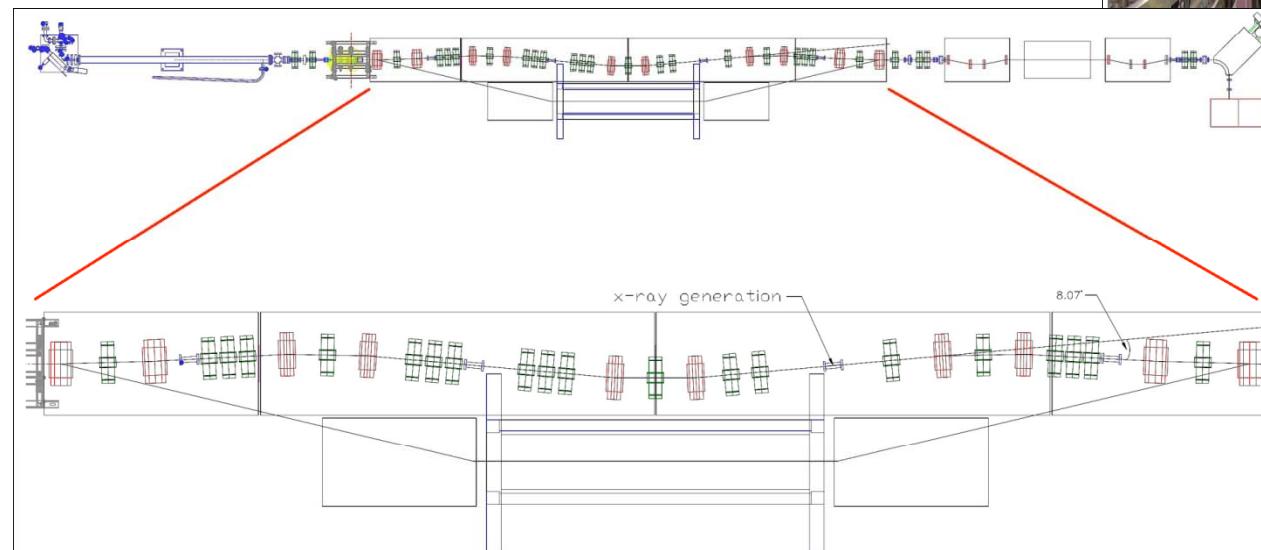
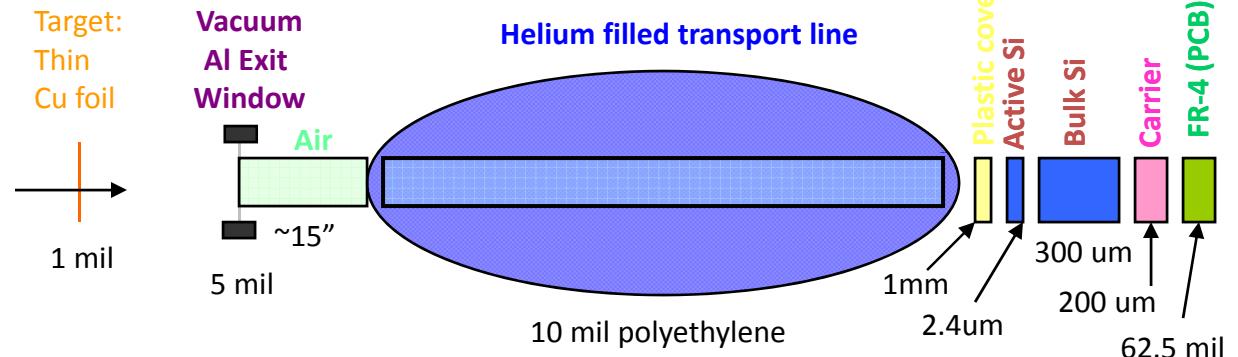
# Context

Access to multi-project infrastructure  
(radio-neutrino, x-ray FEL, Super KEKB upgrade...)

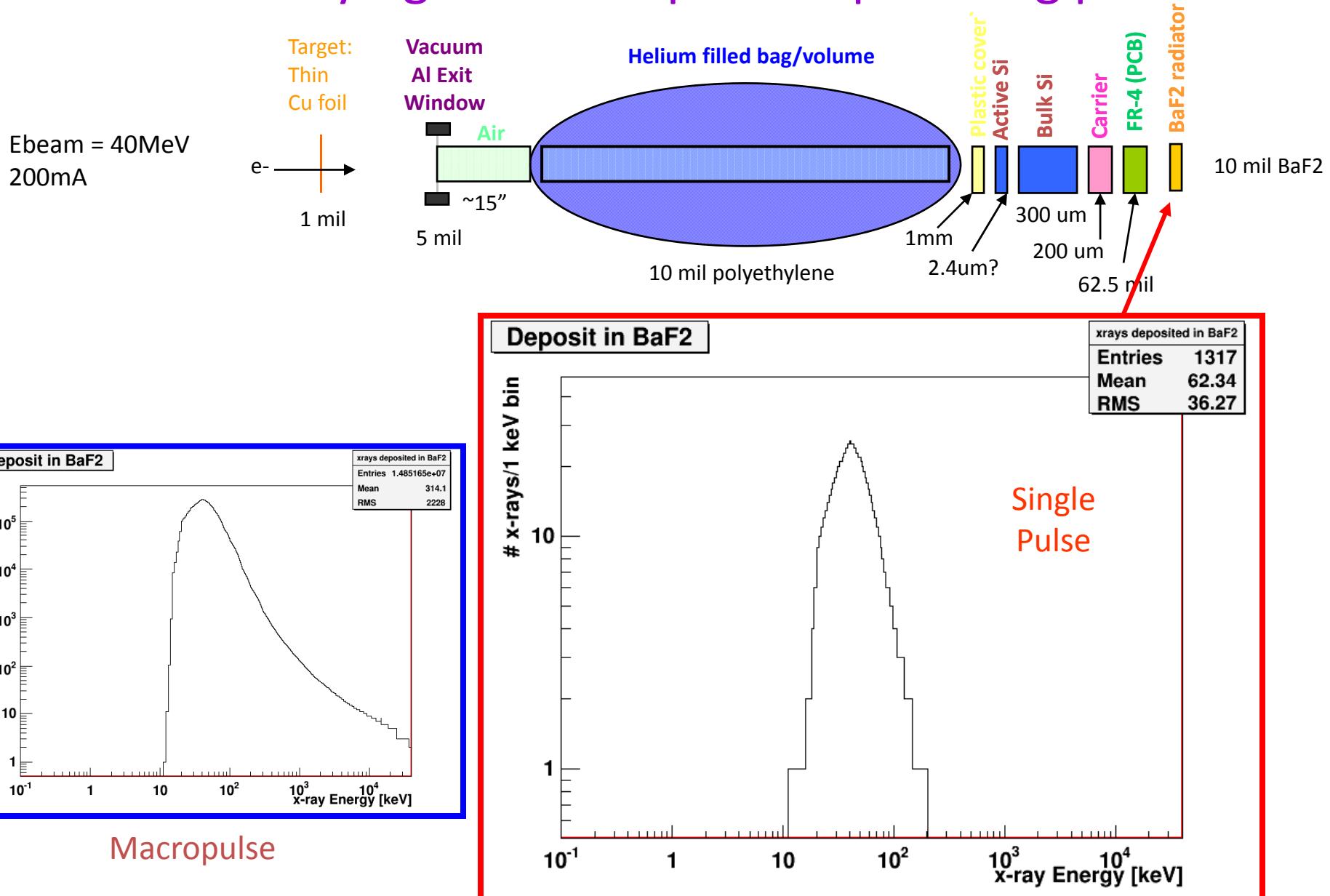
- Test beamline in Watanabe Hall commissioned this fall
  - intense flux, ~1ps timing
- Access to an array of high quality test equipment
- Expect Hawaii to play an expanded test/characterization role
  - ASIC input coupling studies
  - System timing performance
  - Integrated detector results
- Key deliverable: papers for students and postdoc

# Bremsstrahlung x-ray source: UH FEL

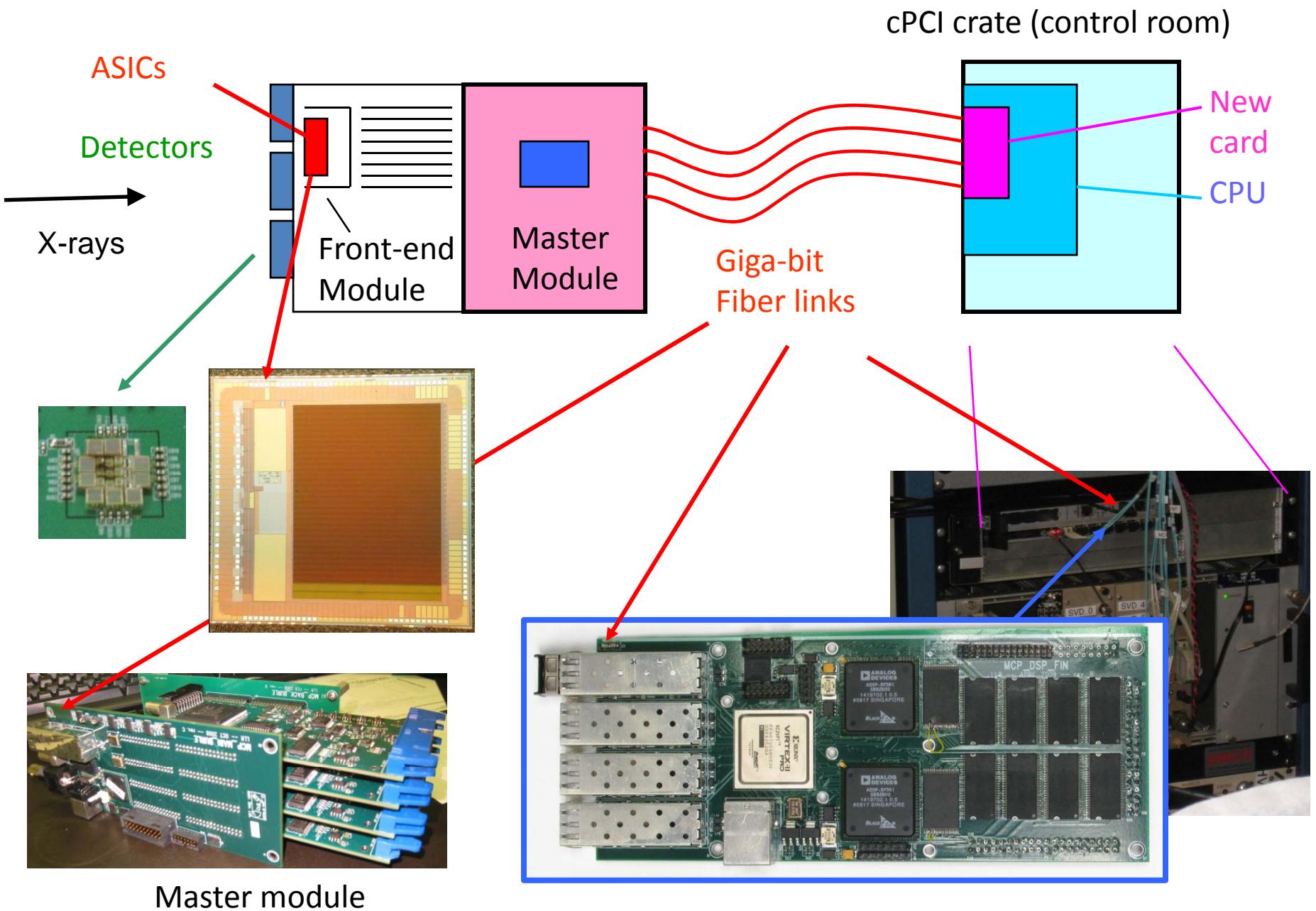
First x-rays: September 2010!!!



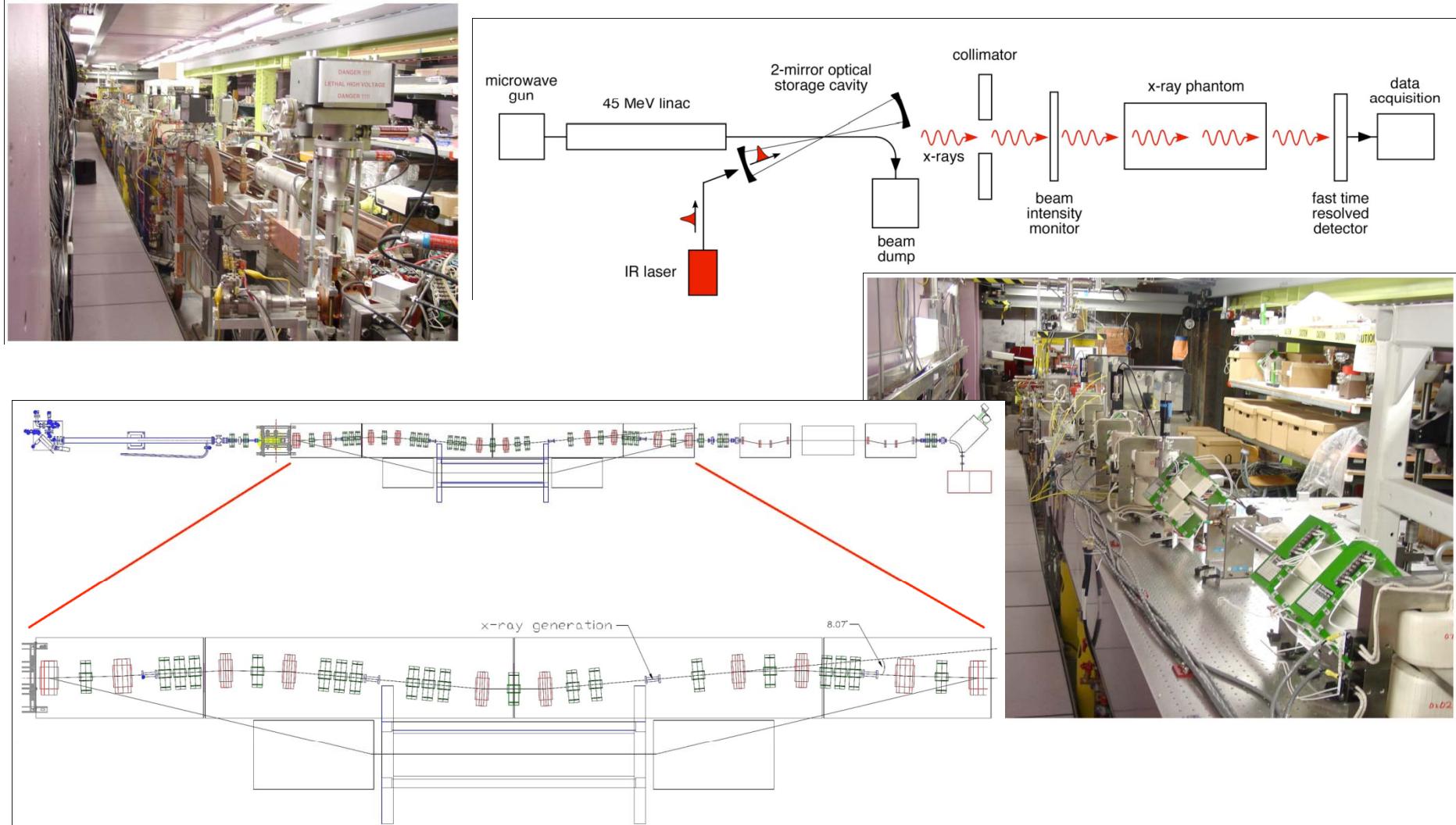
# FEL = very tight bunch specs ~ 1ps timing probe



# Readout for FEL x-ray beamline

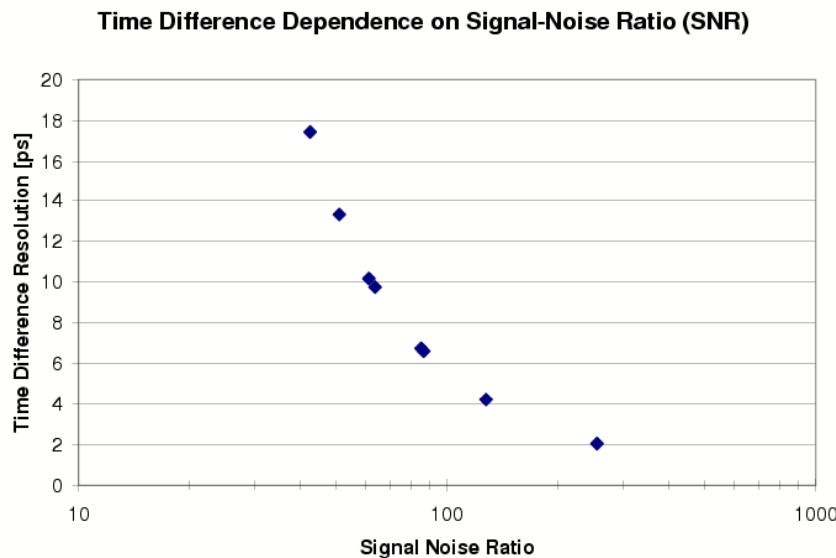


# Mono-chromatic x-ray Source



# Front-end Electronics studies

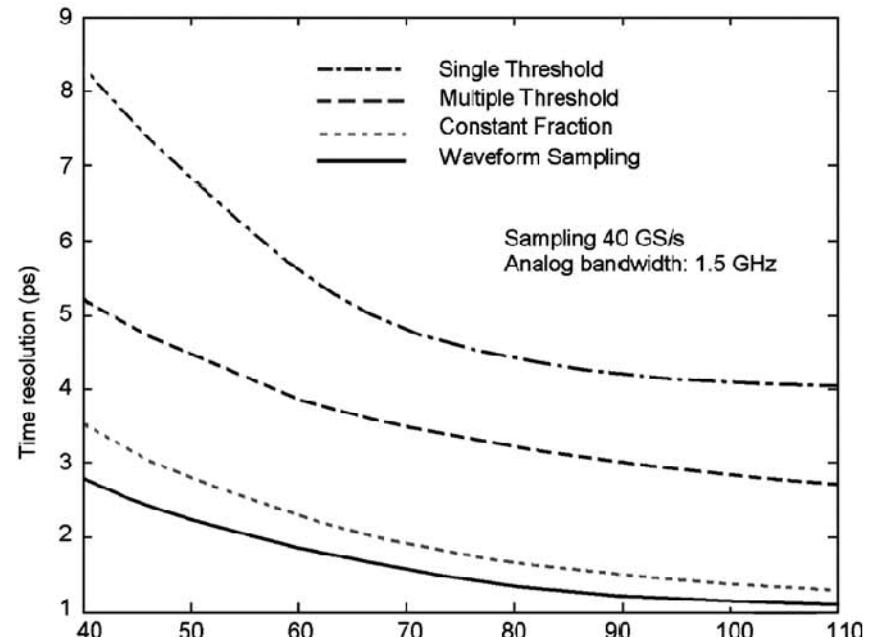
1GHz analog bandwidth, 5GSa/s



G. Varner and L. Ruckman

NIM A602 (2009) 438-445.

Simulation includes detector response

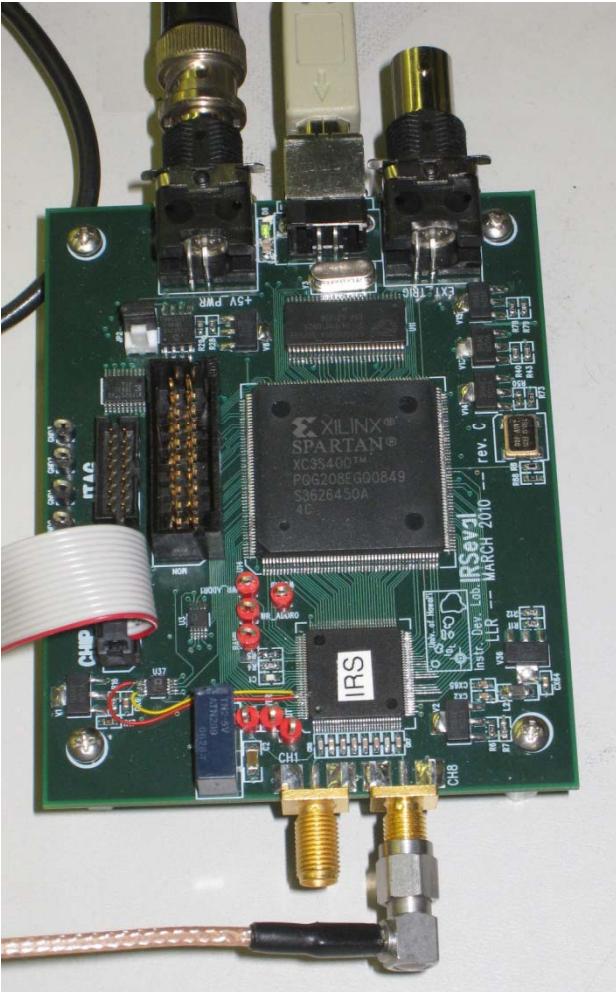


J-F Genat, G. Varner, F. Tang, H. Frisch

NIM A607 (2009) 387-393.

# Another example

## Detailed input characterization

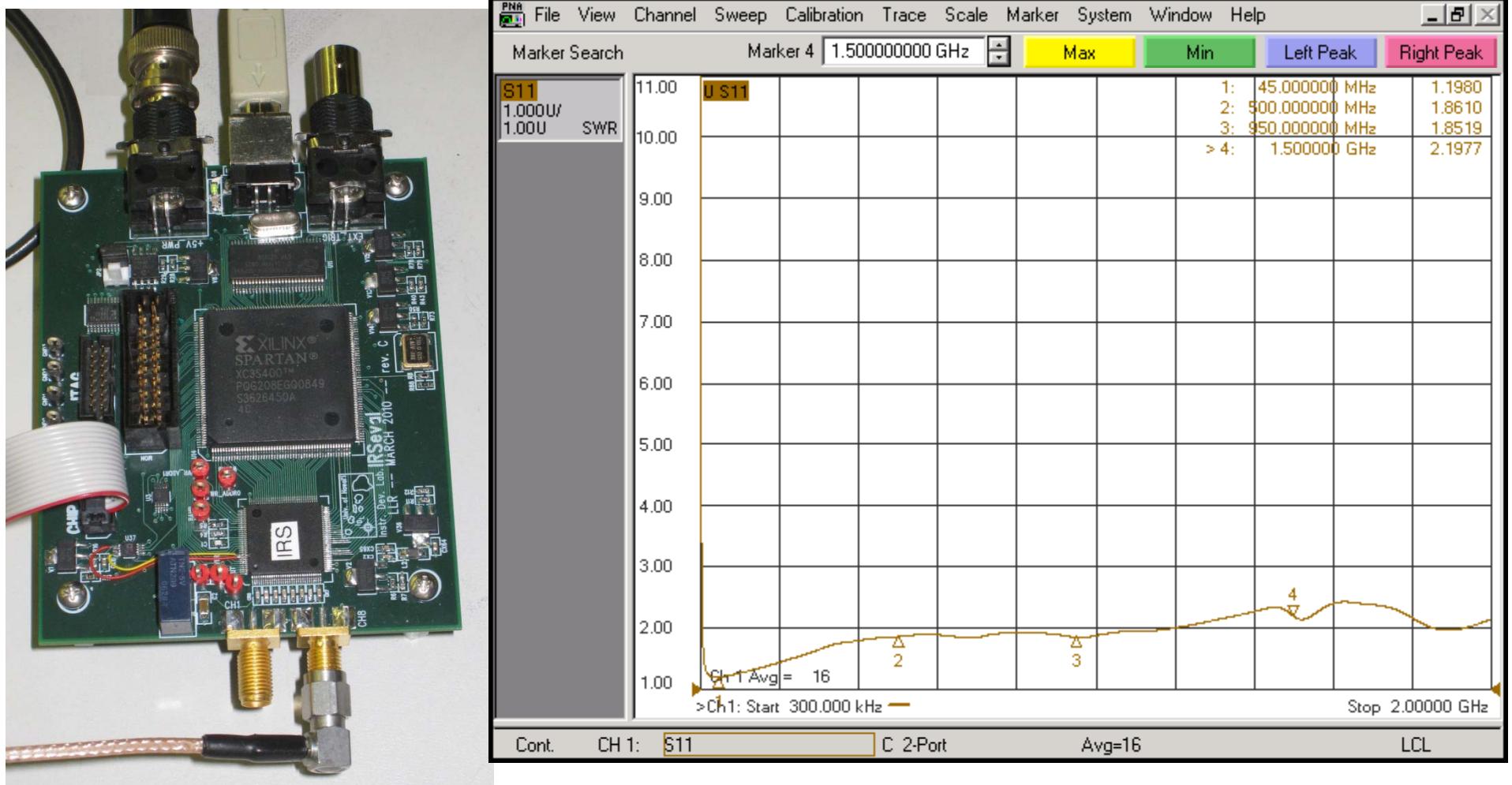


- ANITA and Askaryan Radio Array (south pole) require high quality RF electronics characterization equipment:
  - 8 GHz, high sensitivity Network analyzers
  - Noise figure meters
  - TDR
  - Fast impulse generators

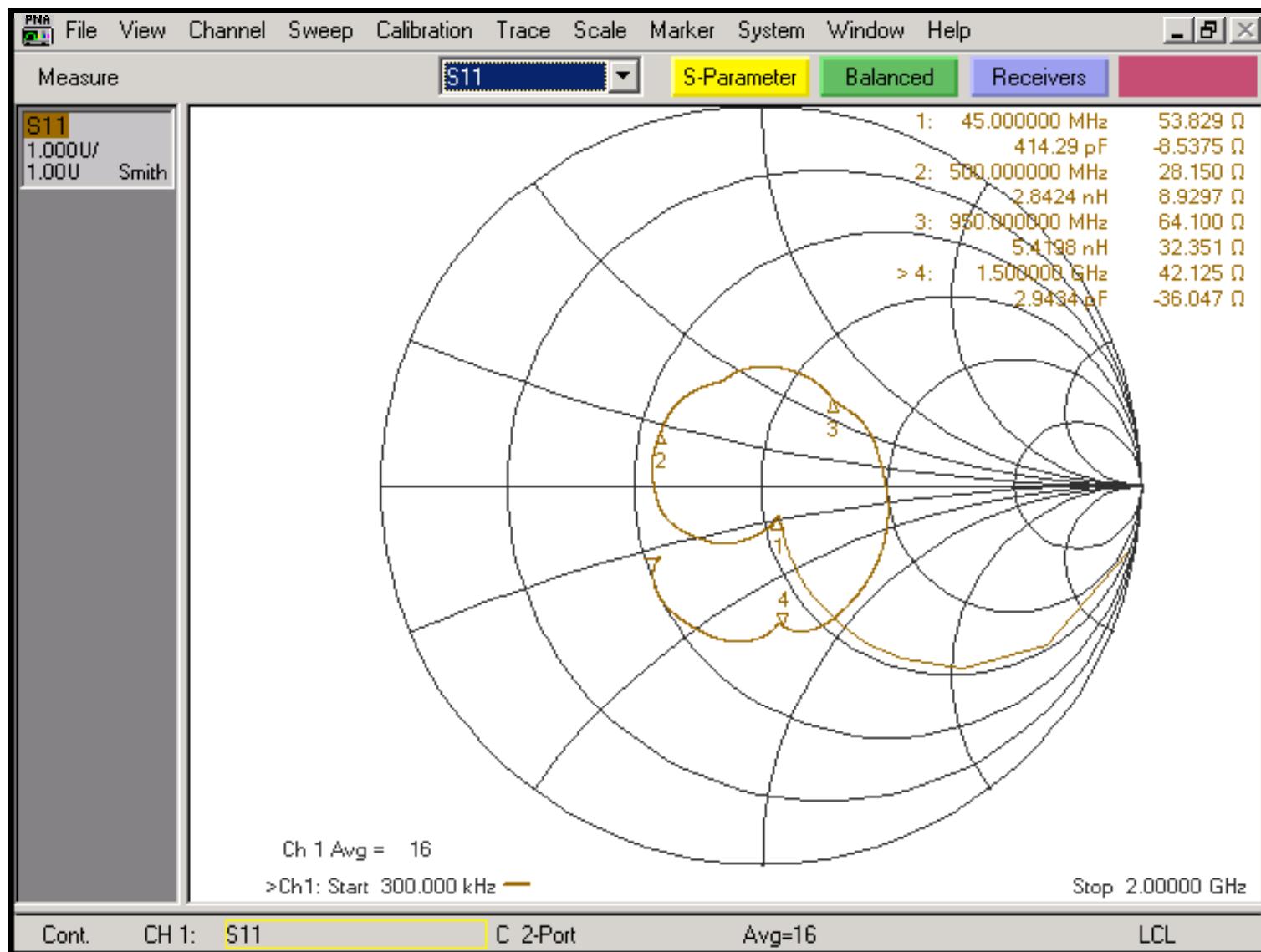
In addition to piLas and other resources mentioned previously

# Ice Radio Sampler (IRS)

## RF input coupling (S11)



# Ice Radio Sampler (IRS)



P. Gorham -- measurement

# Summary

There is a **HUGE amount of firmware and readout software development work still**

- Use overlap with other projects to bring additional resources to bear
- Exploit existing capabilities for detailed characterization and insight into ways to improve ASIC/system performance
- Both xFEL commissioned and new test equipment since last GP Review

# Backup Slides

Some background context...

