

# Update of ARRA Funded Activities: Detectors

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# Background

- DOE ARRA funds for detector activities at the APS: \$4.3M
  - Funds were received about 1 year ago.
- Allocation:
  - Commercial detector purchases.
  - Detector support staff:
    - Detector software support.
    - Detector development and beamline instrumentation.
  - 1K frame transfer Fast CCD detector (with LBNL/ALS).

# Commercial Detectors

Description	Proposed July 2009	Ordered	Status	For whom
Pilatus 100K	3	3	Delivered	Sectors 6, 20, 33
Pilatus 1M	1	1	Expected Nov 2010	8-ID
Pilatus 2M	1	1	Expected Oct 2010	12-ID
Vortex ME4	5	4	2 units delivered 2 units expected Sep 2010	8-BM, Sector 20 Sectors 2, 4/DP
Bruker SDD	0	1	Expected Jan 2011	Sector 2
PerkinElmer a-Si	5	2	Delivered	Sector 11, DP
GE a-Si	0	4	Expected Aug-Nov 2010	Sector 1
Shimadzu CCD	1	0	Did not to fund w/ ARRA	
CZT array	1	0	Did not to fund w/ ARRA	

DP = APS Detector Pool

Total commercial detectors = \$3.4M

Contact: A. Miceli, XSD-ODG

# Detector Support Staff

- Detector software support
- AES-BCDA: Jeff Gebhardt
  - Started in June 2010.
  - Currently working on drivers for the 4 ARRA-funded GE a-Si detectors (Sector 1).
  - Will work on drivers for areaDetector and on the delivery of new detectors to APS beamlines.
  - Liaison to XSD-ODG (Detector Pool).



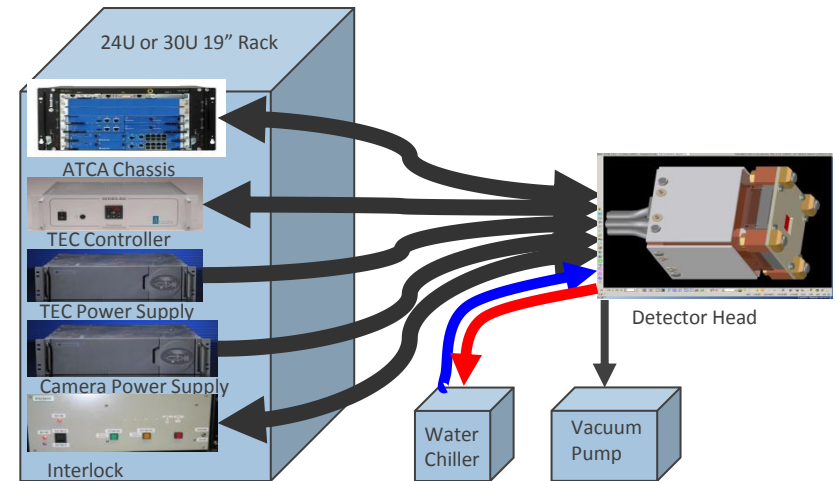
# Detector Support Staff

- Detector development & beamline instrumentation
- XSD-ODG: David Kline
  - Started in November 2009.
  - Currently working on fast timing instrumentation for 7-ID and on several custom detector projects with Steve Ross.
  - Also supports the operations of the Detector Pool.



# 1K Frame Transfer Fast CCD detector

- Based on 480 x 480 Fast CCD design; in collaboration with LBNL/ALS.
- 1920 x 960 pixels, 30  $\mu\text{m}$  x 30  $\mu\text{m}$  pixel size.
- Frame transfer mode (960 x 960 pixels).
- 200- $\mu\text{m}$ -thick fully depleted Si (high QE).
- $\sim 5$  msec readout.
- 192 analog outputs.
- 12 fCRIC (fast custom IC) readout chips.
- Compact detector head.
- Raw data  $\sim 400$  MB/sec
- Capable of data compression.



TASK	Date
Requirement Document & Letter of Terms	Completed
Design Review	9-13-2010
Back End Electronics	5-13-2011
Integration	10-31-2011
Project completion	3-30-2012

Contact: J. Weizeorick, XSD-ODG

# Summary

- DOE ARRA funds for detector activities at the APS: \$4.3M
  - Funds were received about 1 year ago.
- Commercial detector purchases
  - About \$3.4M committed.
  - 16 detectors ordered; 7 delivered; 9 expected by January 2011.
- Detector support staff
  - J. Gebhardt in AES-BCDA; detector software support.
  - D. Kline in XSD-OG; detector development and beamline instrumentation.
- 1K frame transfer Fast CCD detector (with LBNL/ALS)
  - Design review planned for September 2010.
  - Expected completion by April 2012.