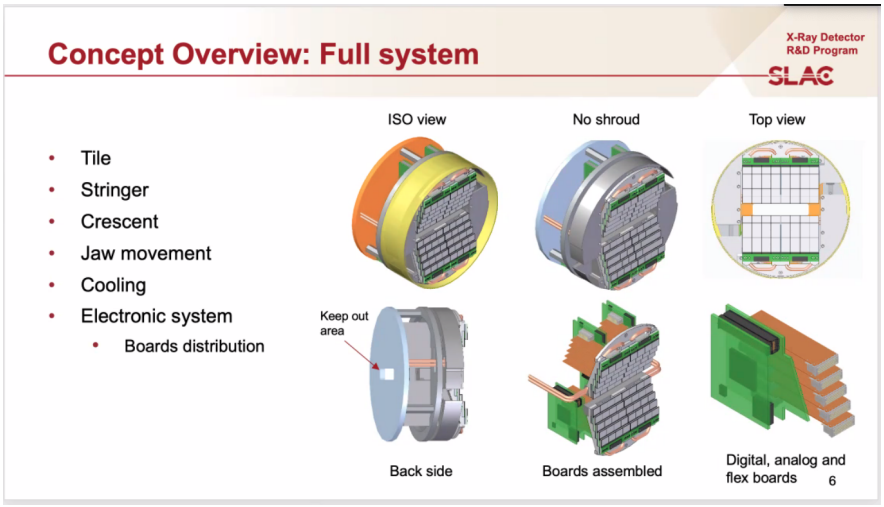
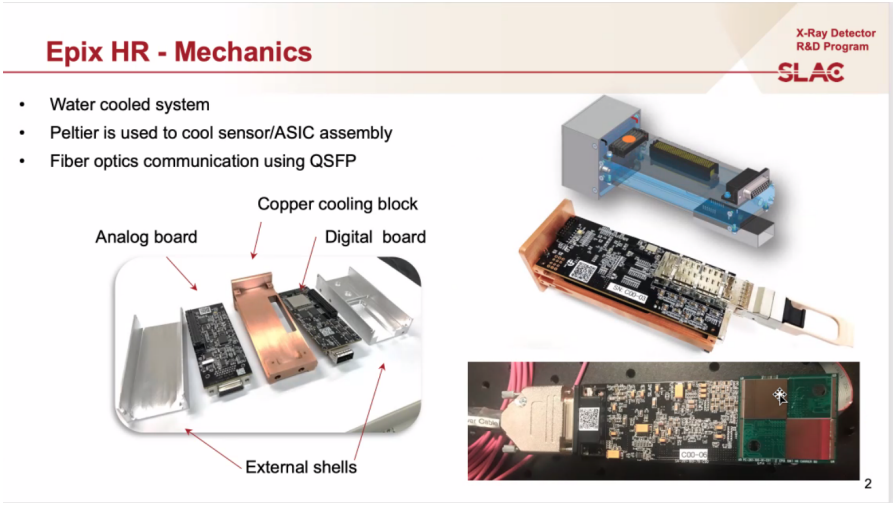
EPIXHR

Slides from Dionisio Doering





Info from Matt

Weaver, Matt, Wed 9/22/2021 5:02 PM
To: Dubrovin, Mikhail, O'Grady, Paul Christopher

Hi Mikhail,

I just want to confirm what we talked about earlier today. The asicPixelConfig map which appears in the epixhr2x2 config object will be an array of shape (4,144,192). The ASICS are positioned like so:

```
   A1  |   A3
  -----+------
   A0  |   A2
```

The map will be stored such that the orientation of all the ASICs appear the same.

-Matt

Sensor geometry

Pretty much similar to epix10ka, pixek sizes 100x100um, 100x225um, 225x225um.

Geometry file

/cds/group/psdm/detector/alignment/epixhr2x2/geo-epixhr2x2-1-segment.data

essential part of the geometry file

```
# HDR PARENT IND        OBJECT IND     X0[um]   Y0[um]   Z0[um]   ROT-Z ROT-Y ROT-X     TILT-Z   TILT-Y   TILT-X

SEGMENT        0    EPIXHR2X2:V1  0         0        0        0       0     0     0    0.00000  0.00000  0.00000
IP             0    SEGMENT       0         0        0    10000      90     0     0    0.00000  0.00000  0.00000
```

Gain factors

Gain range	Design(*), ~ADU/eV	Measured (***) , eV/ADU	Constants, ADU/keV		epix10ka default, ADU/keV
High	1	24.4eV/ADU	41.0		16.40
Medium	1/3		13.7		5.466
Low	1/80		0.512		0.164

*) Doering, Dionisio <ddoering@slac.stanford.edu> Sun 10/3/2021 7:39 PM

To: Hart, Philip Adam; Dubrovin, Mikhail; Blaj, Gabriel;Dragone, Angelo

Cc: O'Grady, Paul Christopher; Kamath, Umanath Ramachandra; Markovic, Bojan

Hi Philip, I just checked this with Angelo, the number we should use are the ones from the 10kT, which means:

H M L
1 1/3 1/80

**) Dionisio: We will get the measured gain values with the upcoming tests. For now we can estimate them using the expected gain ratios between high to medium and high to low gains respectively x3.925 and x141.6.

***) Dionisio: Last time we measured we got for the Cd sealed source ~22000/900ADU = 24.4eV/ADU

Philip: I think 24 ev/ADU should be for high gain - 100 counts would be 2.4 keV, more or less the photon it's aimed at.

References

- 2021-08-20 Dionisio Doering presentation ePixhr10kTV2_LCLSIntegration_V1p0.pptx
- 2021-09-22 Dionisio Doering presentation ePixhr10kTV2_LCLS-IIDataDescramble_V1p0.pptx
- 2020 IEEE - Readout System for ePixHR X-ray Detectors
- Poster at LCLS_userMeeting_2020_tamma (pdf)