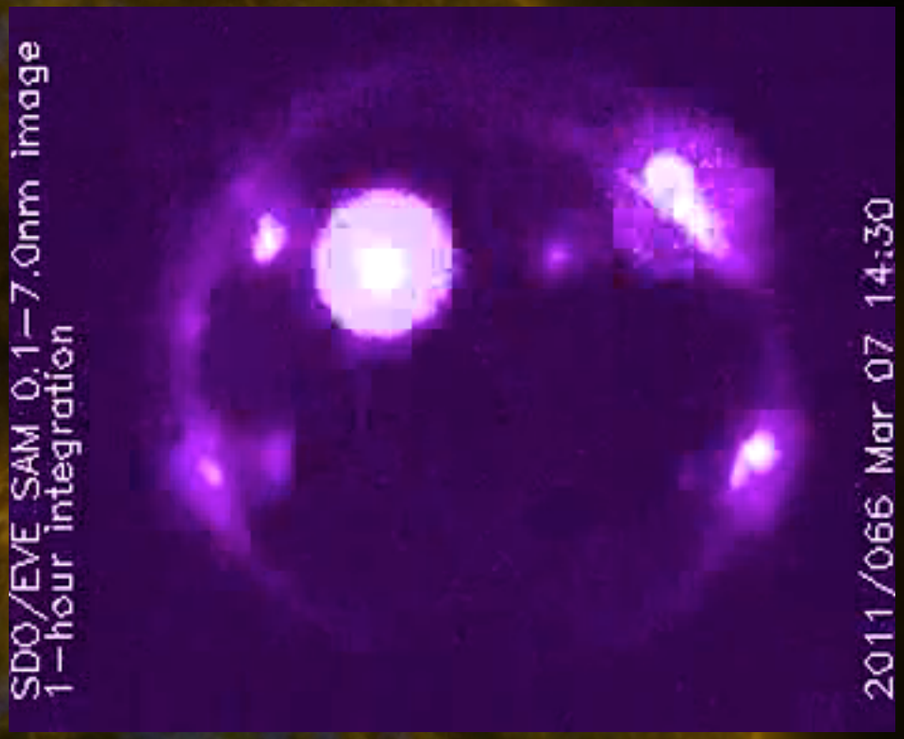
Flare Location: Quadrent Detector, and Pinhole Camera on SDO-EVE

Andrew Jones (CU/LASP)
andrew.jones@lasp.colorado.edu

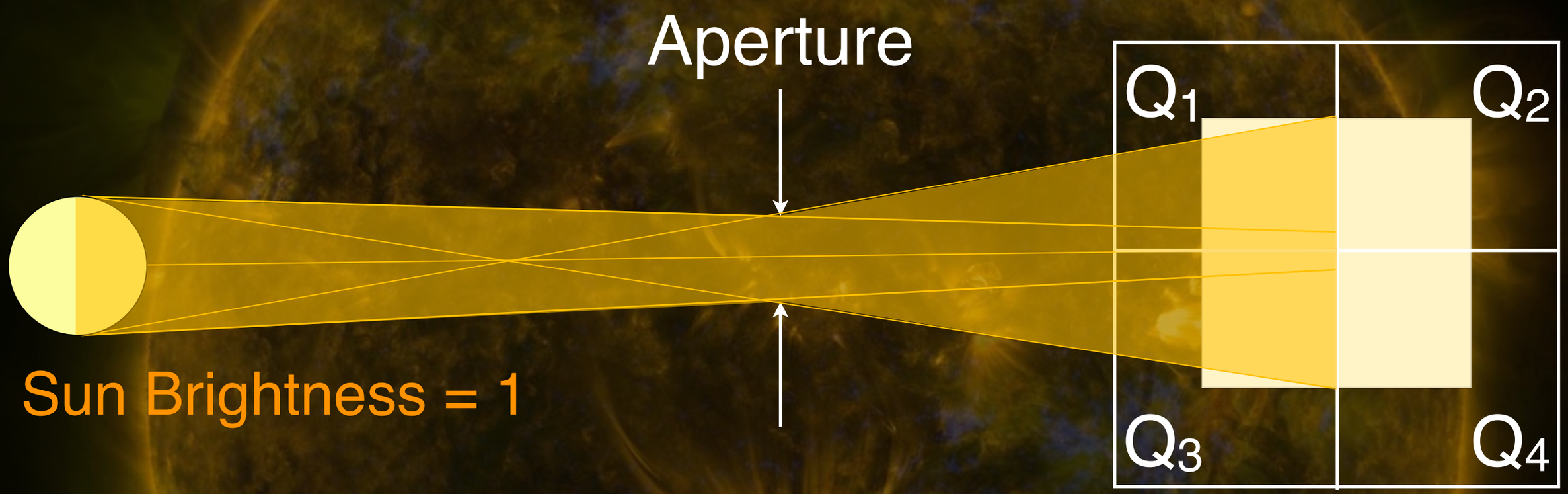
PINHOLE CAMERA

- SAM on EVE
  - ~200 pixel diameter image
  - 0.1—5 nm
  - Shows AR and flare location



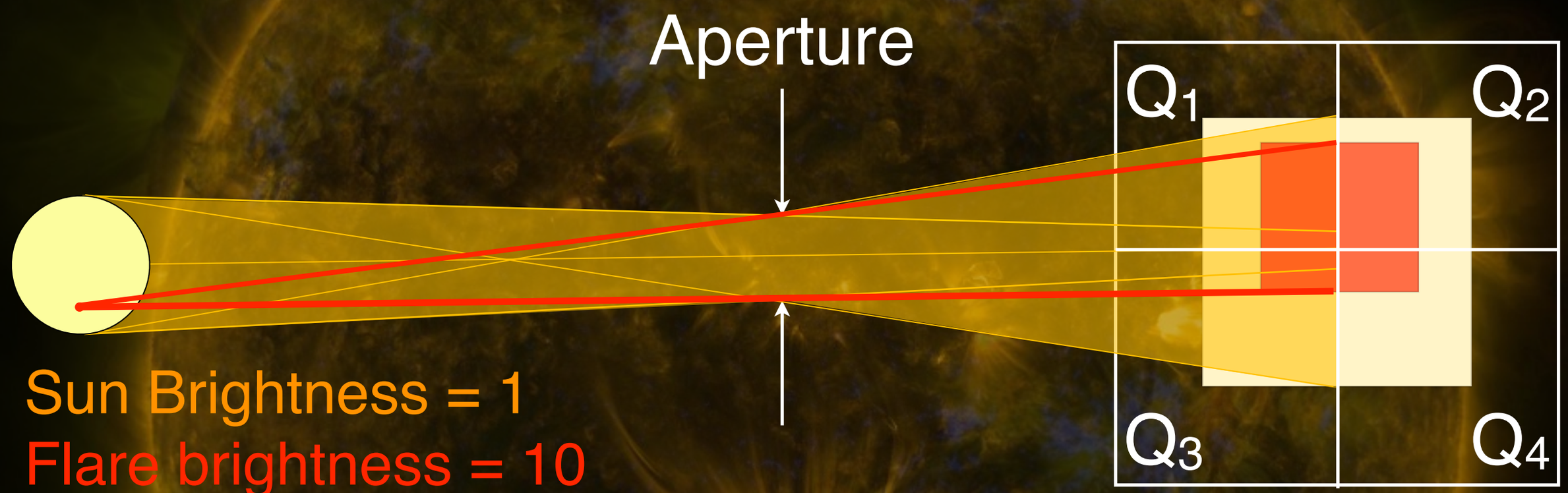
  - Low data rate
  - Could be modified to show coronal holes too
  - Could be modified for SX spectroscopy

PRE-FLARE



$$X = [Q_2 + Q_4]-[Q_1 + Q_3]/\text{sum} = [(1/4)+(1/4)]-[(1/4)+(1/4)]/(1) = 0.00$$
$$Y = [Q_1 + Q_2]-[Q_3 + Q_4]/\text{sum} = [(1/4)+(1/4)]-[(1/4)+(1/4)]/(1) = 0.00$$

FLARE

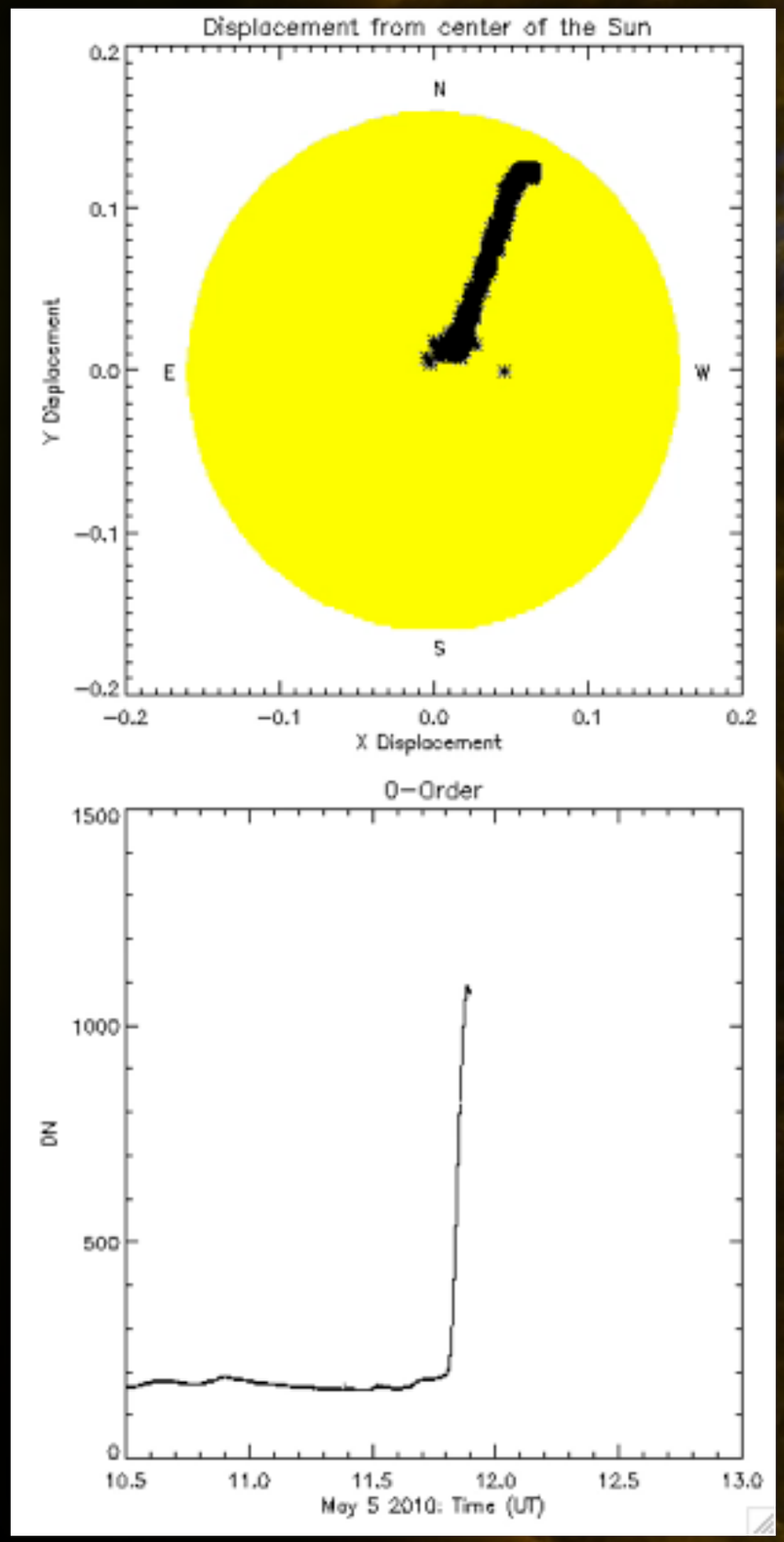


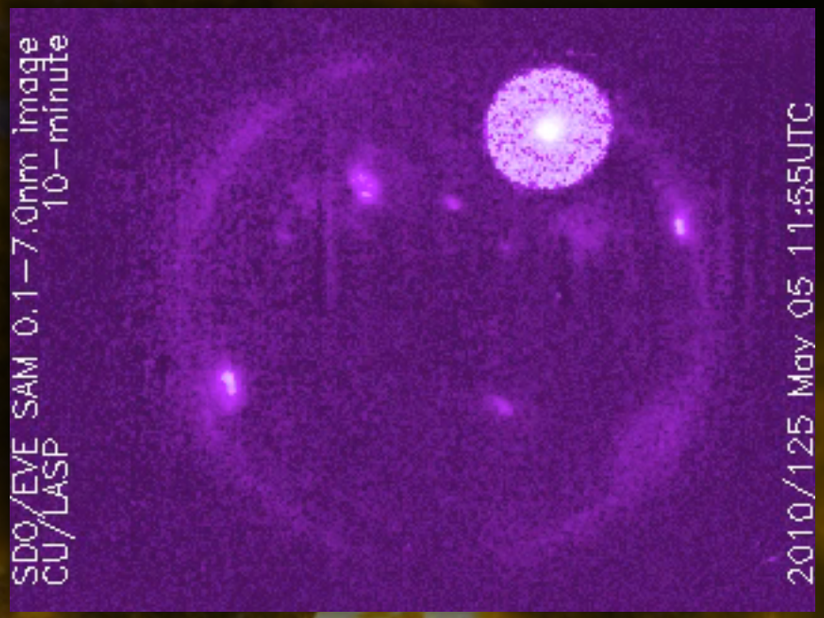
$X = [Q_2 + Q_4]-[Q_1 + Q_3]/sum = [(¼+4)+(¼+1)]-[(¼+4)+(¼+1)]/(1+10) = 0.00$

$Y = [Q_1 + Q_2]-[Q_3 + Q_4]/sum = [(¼+4)+(¼+4)]-[(¼+1)+(¼+1)]/(1+10) = \mathbf{0.55}$

GOES VW: April 13 2015

SDO-ESP AND -SAM





ESP

SAM

SAM Irradiance product confused by EVE spectral lines (It was not designed for this!)

This is only a C8.8 flare

REQUIREMENTS

	QD	Pinhole Camers
Identify Flaring Region	😀	😇
Irradiance Measurements	😇	😐
Spectral Measurements	😕 XRS L/S	😐 photon counting SXR
Coronal hole boundaries	😞	😐 with EUV Filter ?

Comparisons

Quad-Detector

Pro	Con
Very simple	can't distinguish multiple points
Location of COI better than 1' for X1 event	
Well established Irradiance calibration plans	

Pinhole Camera

Pro	Con
can distinguish multiple points	Still low resolution
Could provide Irradiance	Higher data rate than QD
Maybe see CHs	Irradiance/radiance callibration harder than QD
Maybe provide spectra	
Location ~0.1' for flare events	