

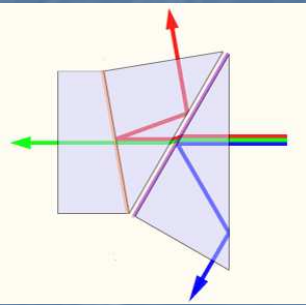
Understanding the New Acquisition

Sensor-Lens Options for 4K Acquisition

Mark Schubin, SchubinCafe.com

Common HD Field Camera/Lens

dichroic prism
with three
identical-
resolution
sensors



B4 (BTA
S-1005-A)
mount

optical
filtering

long-range
zoom lens



1080-Line 2/3" HD Camera's Sensor



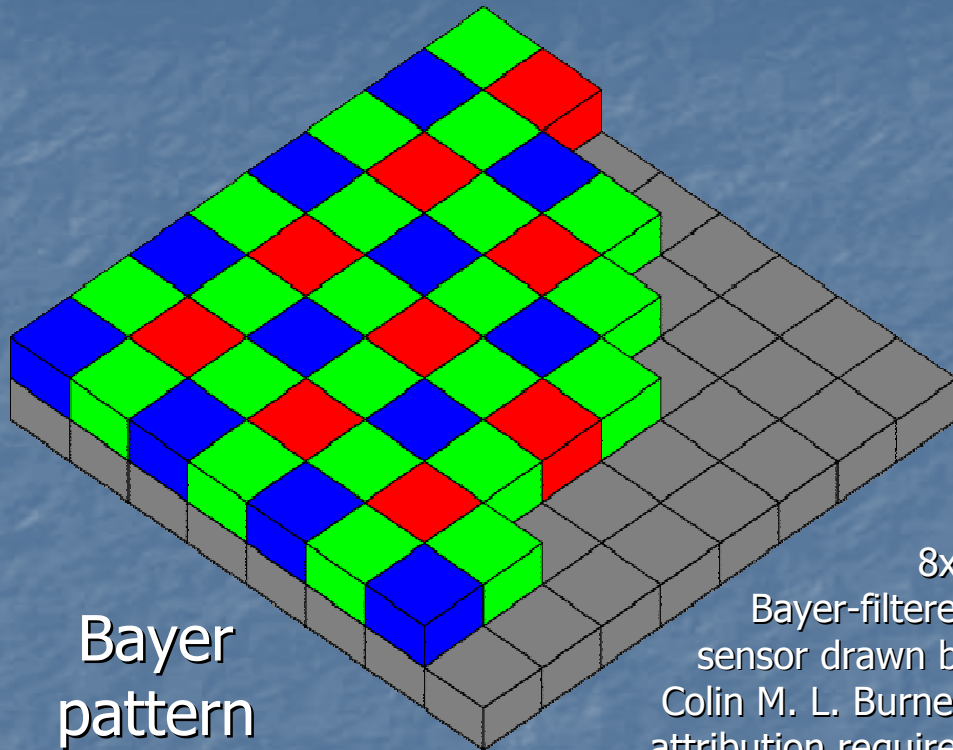
three of these sensors
each with at least 1920 x 1080 photosites
(not 2 x 2)

Option 1: Big Prism

- Special lens adaptor for 3-chip

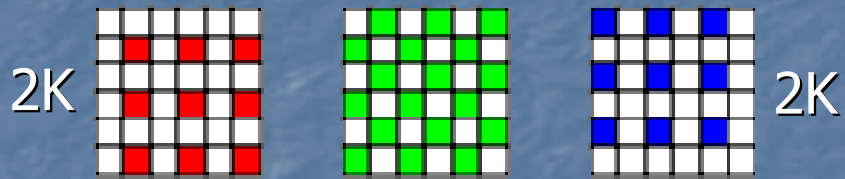


Option 2: Single-Chip w/Color Filter

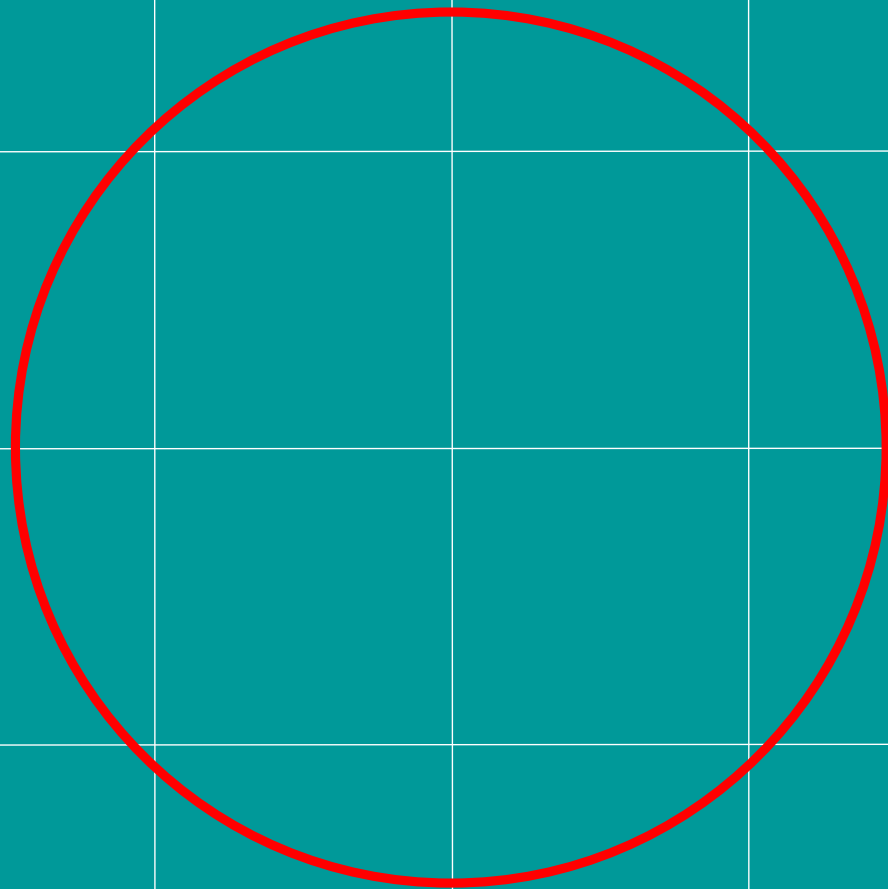


Bayer pattern

8x8
Bayer-filtered
sensor drawn by
Colin M. L. Burnett
attribution required

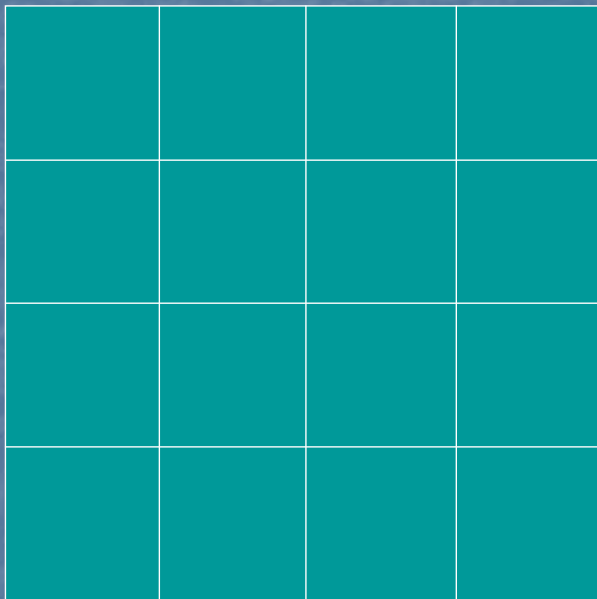


- Perfect optical low-pass impossible
- If chip is 3840 or even 4096 across, not delivering 4K due to filtering (higher-res chips available)



- Lens Issues
 - PL-mount, primes primarily; no long-range zooms (yet) - Larry
 - adaptors from 2/3-inch format lens to S35 sensor lose ~2.6 stops (if perfect)
 - also lens MTF is HD

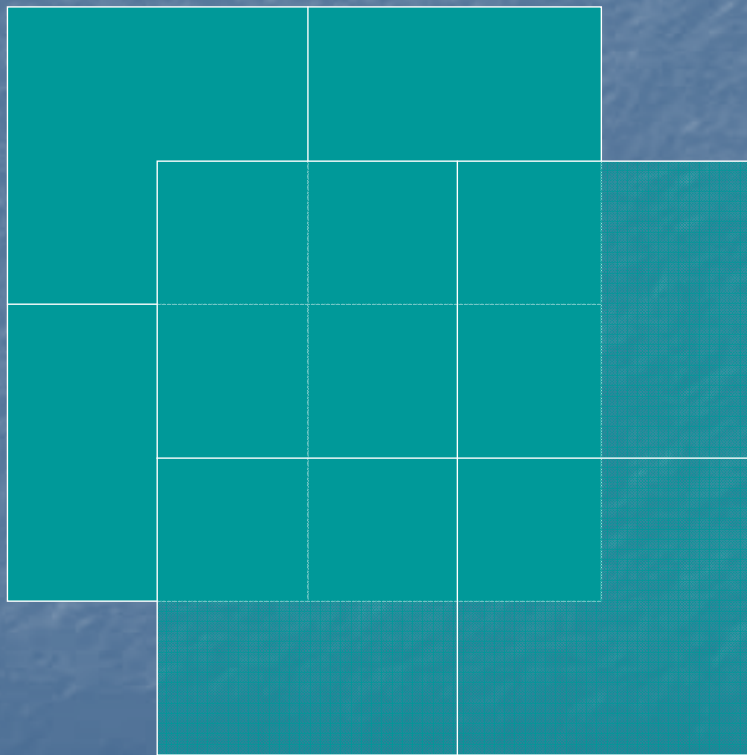
Option 3: Shrink Pixels



x3

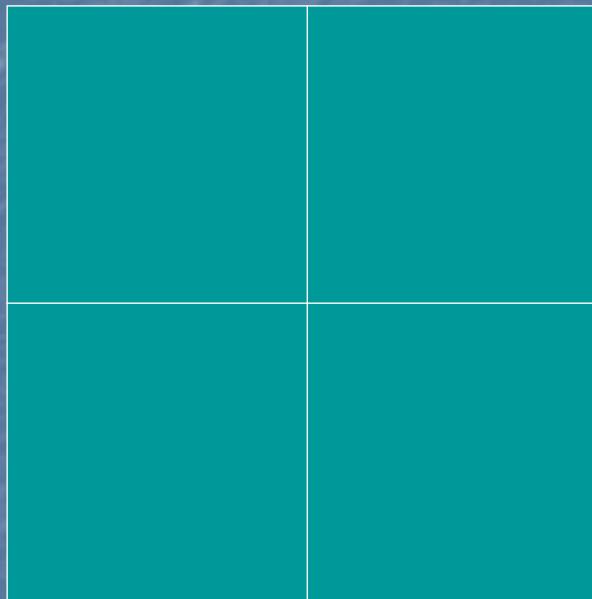
- dead pixels - Joel
- photon noise - Charles

Options 4 & 5: Diagonal Offset



- HD sensors
- 4-chip (two green w/ $1/2$ -pixel diagonal offset)
 - Hitachi demo room
- 3-chip (green offset from red & blue)
 - might see soon

Option 6 - Just Upconvert HD



Grass Valley prototype shown at NAB
sensors match optics perfectly