Crosstalk in Suprime-Cam

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Example:

If a bright object is in a channel, sky will be slightly negative in other channels.

Bright star
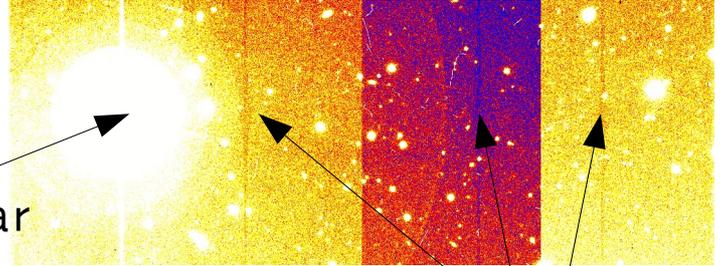
shadows

Parity:

Two shadows will be removed by dithering.
But one won't; will be rather enhanced.
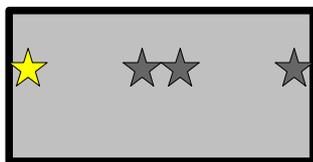
dithered

Enhanced!!

Estimation method:

Dark frames have many cosmic rays and low background.
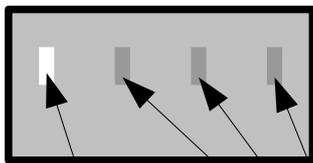
Cosmic rays in dark are used instead of bright objects.

Cosmic ray Check counterparts

The chip/channel differences are neglected in current study.
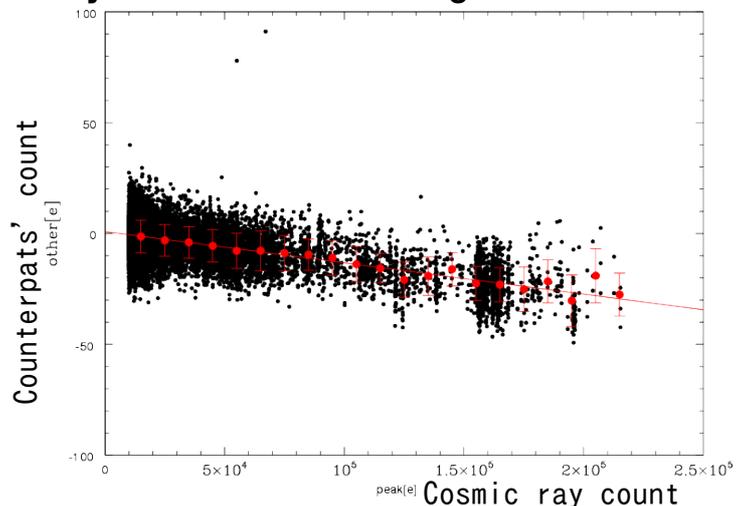
Linear correlation:

The best-fit function is

$$X_{XT} = a X_{max} + b \,;\, a = -1.51 \times 10^{-4}, \, b = 0.50 \, e^- /300\mathrm{s}$$

i.e., if max=50000ADU, the effect is ~7ADU(~20e).

Application:

The correlation can remedy the effect.

before

after