Study of Crosstalk at CalDet

Leo Jenner

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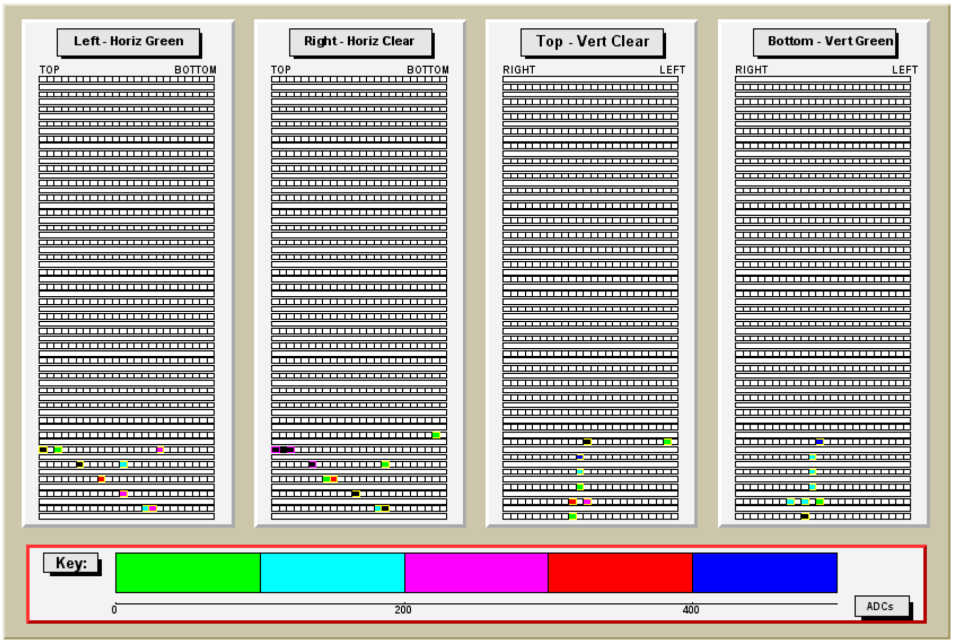
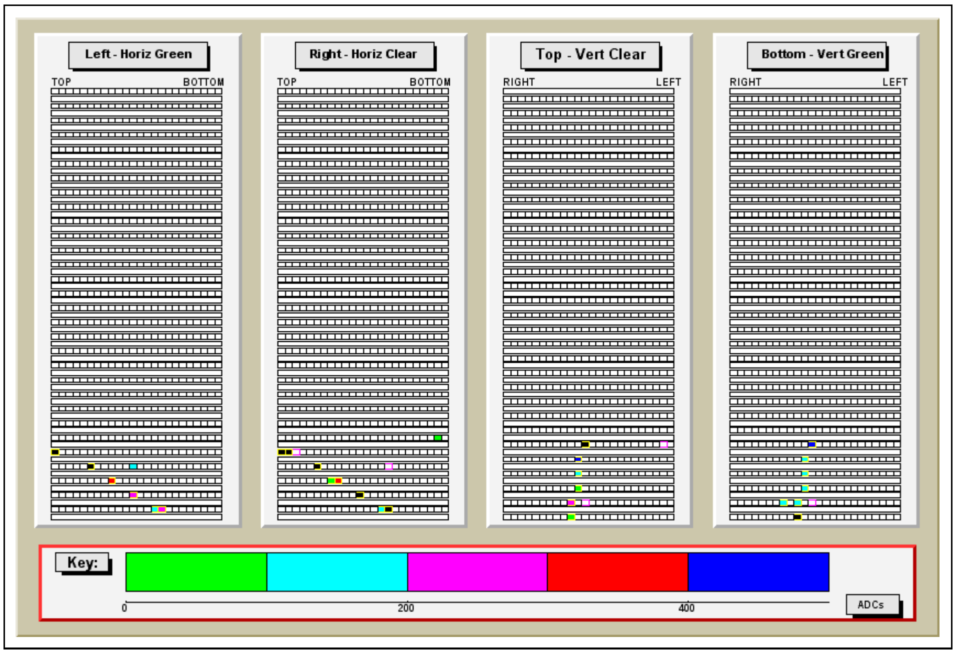
University College London

Overview

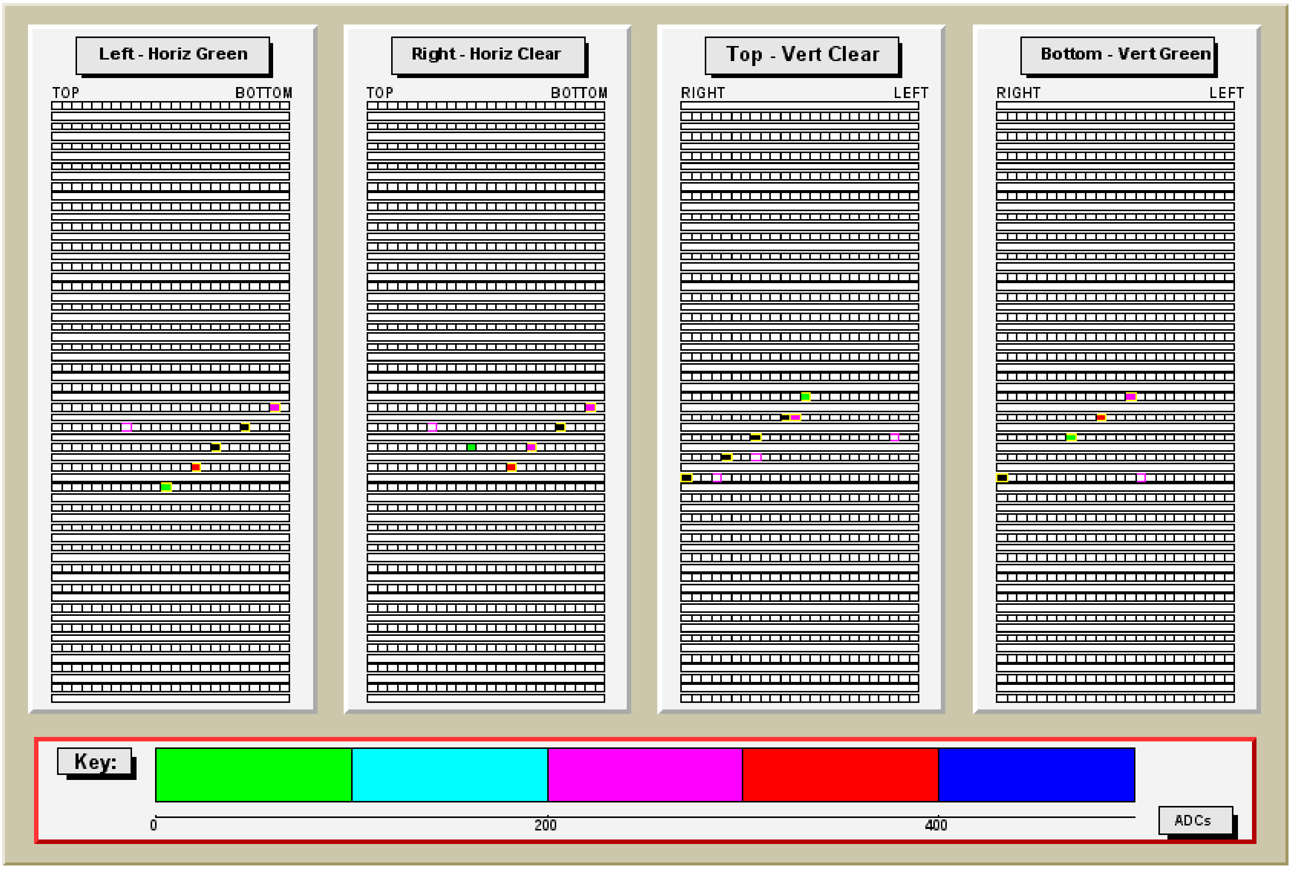
- **Why we need to remove crosstalk:** Crosstalk messes up our track finder.
- **Is it crosstalk or not?:** Sometimes it's difficult to determine for certain whether a hit is crosstalk or not.
- **Crosstalk hits from each pixel:** Plots made to compare each pixel
- **Up/Down, Left/Right Comparison:** Using constant spot position
- **Light Output Change:** Using single ended hits
- **Next...**

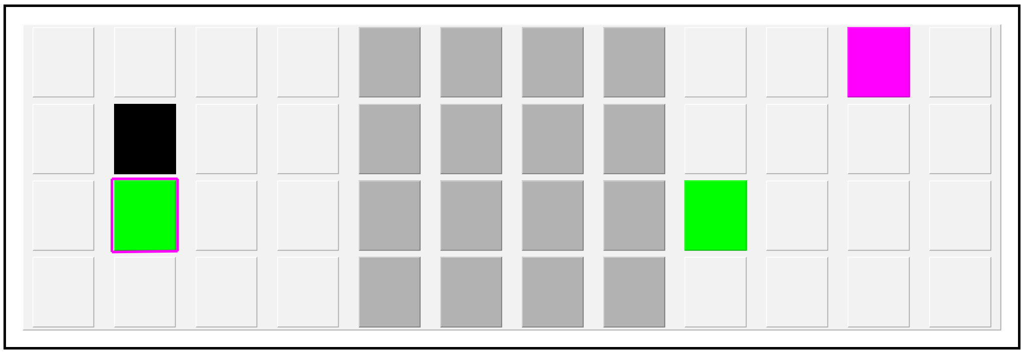
Why we need to remove crosstalk





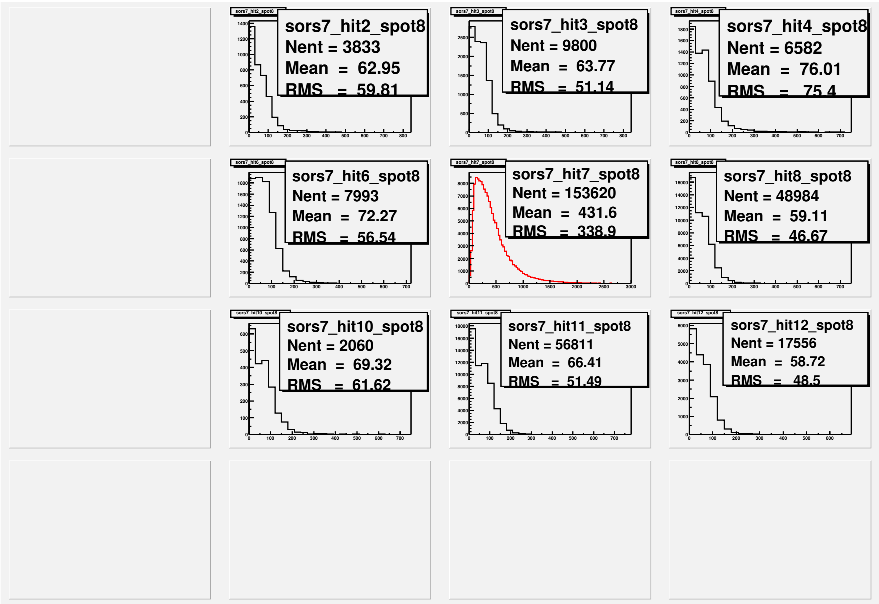
Is it crosstalk or not?

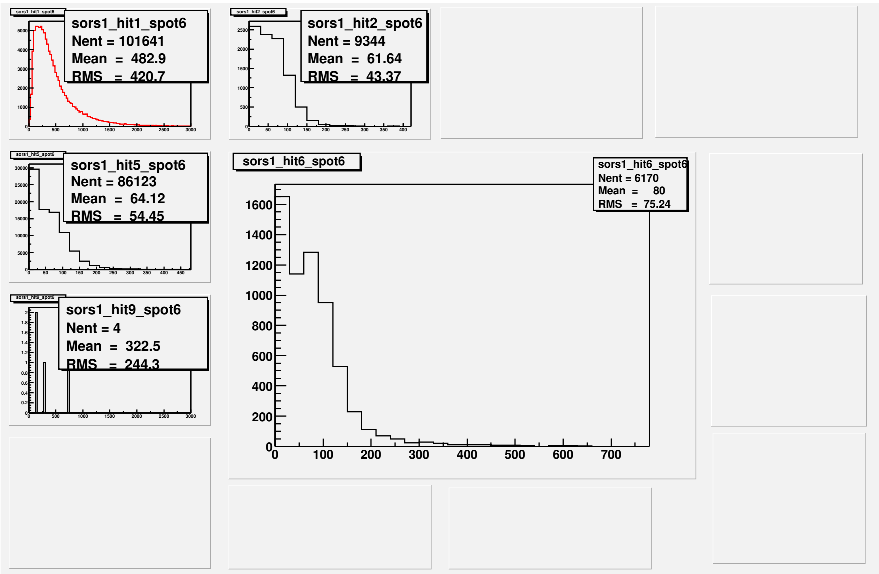




- Possible causes: Neutrons, Noise, Crosstalk to non-adjacent pixels(!)

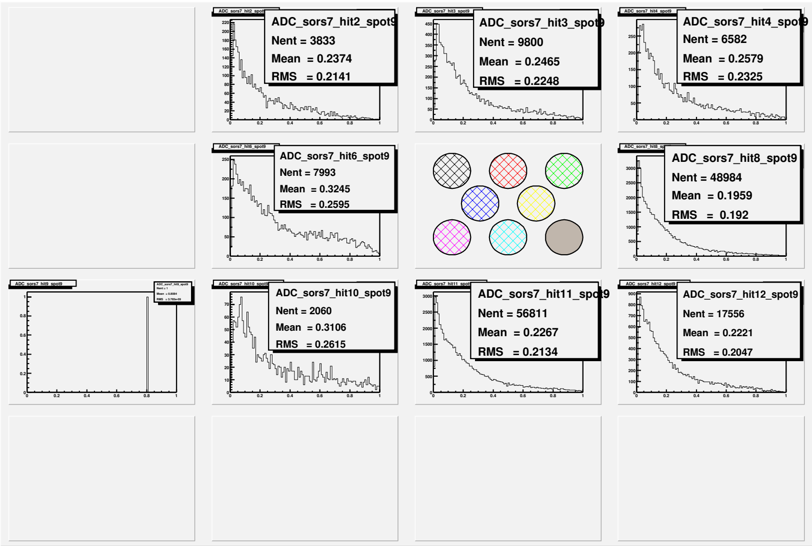
Crosstalkhits from each pixel (ACD's)

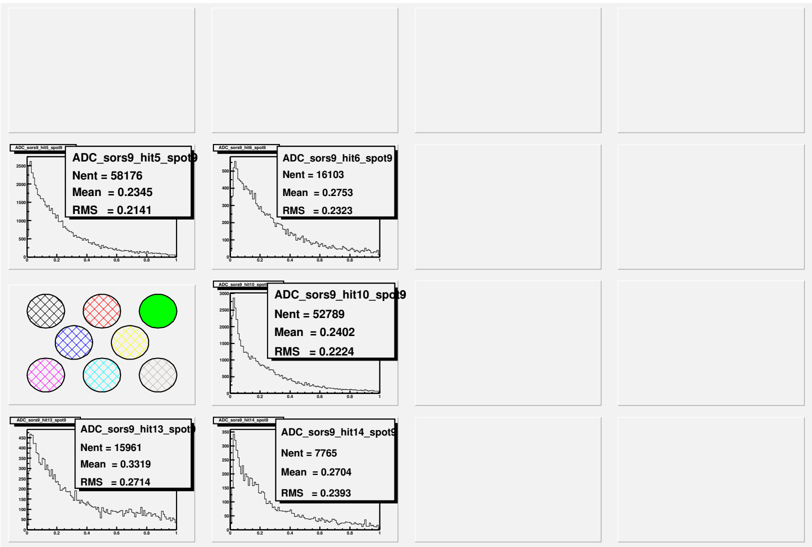




- 1 photoelectron peak from optical crosstalk is visible

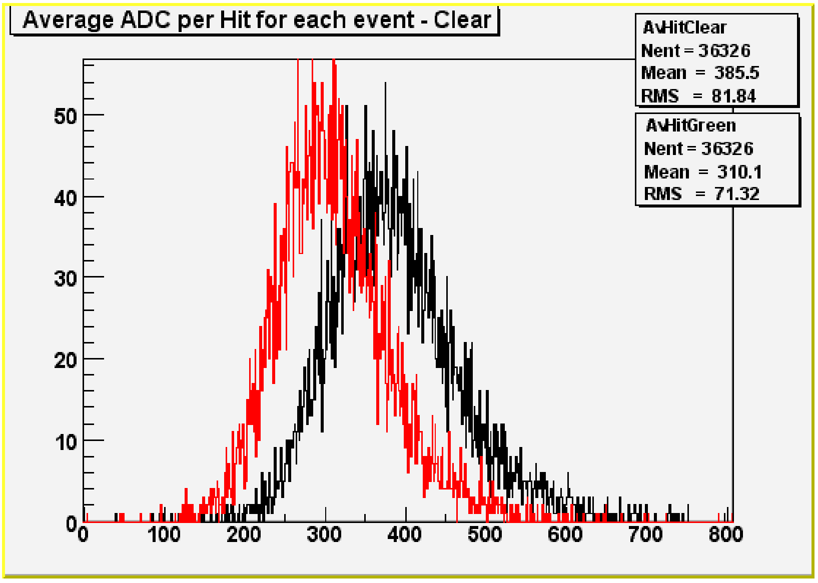
Up/Down, Left/Right Comparison

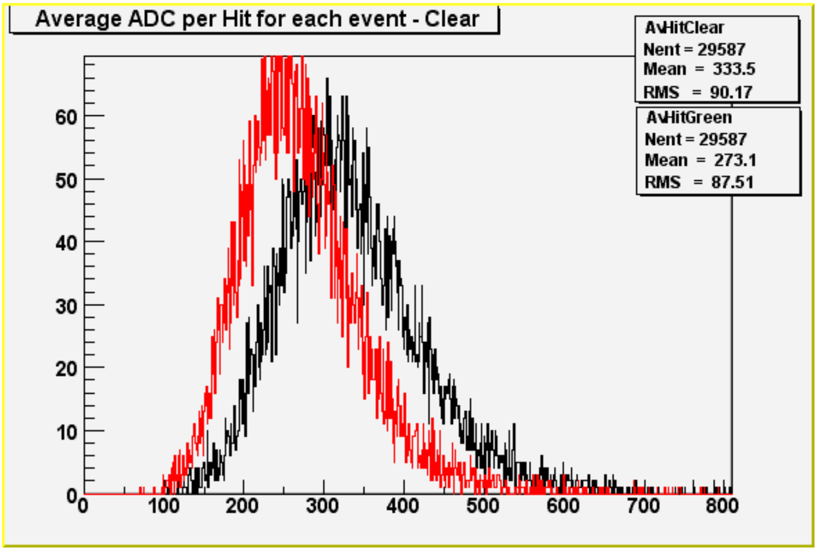




- 3.6 to 5.8 from direct pixel (61.1% increase)
- 2.07 to 2.67 from diagonal pixel (29% increase)

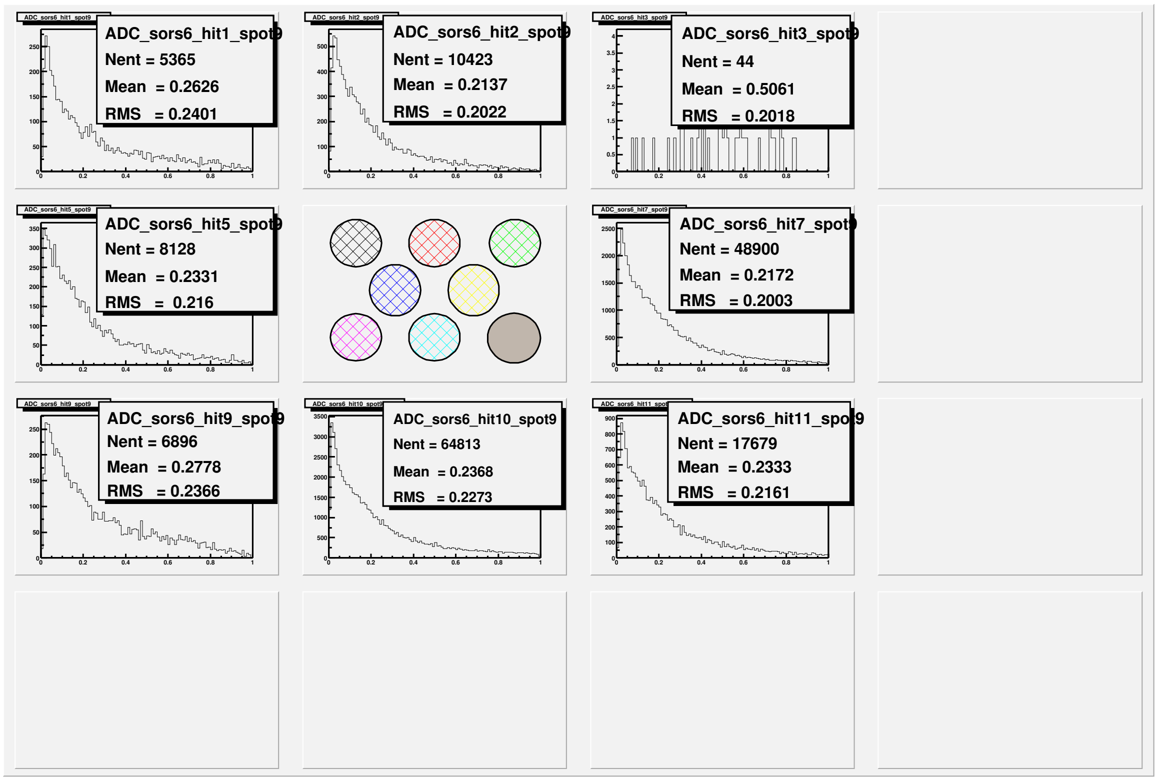
Light Output change





- Clear: 385.5 -> 335.5 (13% decrease)
- Green: 310.1 -> 273.1 (12% decrease)

Next...



- Look more closely at ADC(crosstalk)/ADC(source)
- Add option to 'fold' crosstalk back to original hit
- Use plots to select cut-off point for crosstalk