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Subject: Fwd: ghost masking for PTF
Date: March 15, 2017 at 3:36 PM
To:
Bcc: Frank Masci fmasci@ipac.caltech.edu



Hi Jakob,

You asked me about ghost masking for PTF. Luckily, the person who characterized and wrote the masking code for PTF is still at IPAC. He gave me a summary. There's nothing written up.

* The ghosts are filter-dependent and primarily due to the angle of each filter-plane relative to the focal plane. This a lesson learned in that the ZTF engineering team need to strive to minimize these angles.

* The optical center of the PTF focal plane was also the "reflection" center (see attached schematic). The **red circle** is a bright parent star and the **blue** is it's ghost, mirrored through the center with some scale factor alpha multiplying the distance. This scale factor needs to be calibrated.

* An external catalog is used to find the bright parent stars above some flux threshold, i.e., those determined to cause a ghost on the other side of the optical axis. This catalog can be pre-thresholded for pipeline use. An external catalog is used because parents can (will!) fall in the chip-gaps and remain undetected.

* Given the position of the parent (say x, y in the focal-plane coordinate system), the ghost position is predicted in the coordinate frame of the CCD image. Given the ghost position, a masking radius is assigned depending on the brightness of the parent and the accompanying pixel mask is filled in.

The above was for PTF. The method for ZTF will be driven by characterization using real sky data.

Hope this helps.

Regards, Frank

