

Verifying the Effect of the LADC Prism Exchange on the FORS2 Twilight Flat Fields

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In August 2015 I collected FORS2 twilight flat fields taken with the standard set up with the filters *b_HIGH*, *v_HIGH*, *R_SPECIAL*, and *I_BESS* to verify the effect of the LADC (Longitudinal Atmospheric Dispersion Corrector) prism exchange on the rotator effect. For details see [Moehler et al. \(2010, rotator effect\)](#) and [Boffin et al. \(2015, LADC prisms exchange\)](#).

I selected at most 5 frames per 5° angle range in rotator angle for rotator angles between $\pm 180^\circ$ (angles outside that range were adjusted by adding/subtracting 360°). Then I combined the frames with `fsmosaic` and corrected them by their overscan, median-stacked all the frames (per filter and detector) and normalized each frame by the corresponding stack to remove any rotator-independent structure. Each normalized frame was then rotated to a rotator angle of 0 and to a random rotator angle. Finally all `rotator_angle=0` and `random_rotator_angle` frames were again median-stacked.

I did this exercise for frames observed between February 1 and October 31, 2014 (before the LADC exchange) and between November 13, 2014 and August 4, 2015 (after the LADC exchange). Figs. 1 (*b_HIGH*, *v_HIGH*) and 2 (*R_SPECIAL*, *I_BESS*) show the `rotator_angle=0` frames (bottom: before the LADC prism exchange, top: after the LADC prism exchange). The dark stripes come from the gap between the two detectors.

The frames are displayed at 0.995-1.005, i.e. $\pm 0.5\%$. The structure clearly visible in the old data is gone. The new data show a gradient across the field but no small-scale structure.

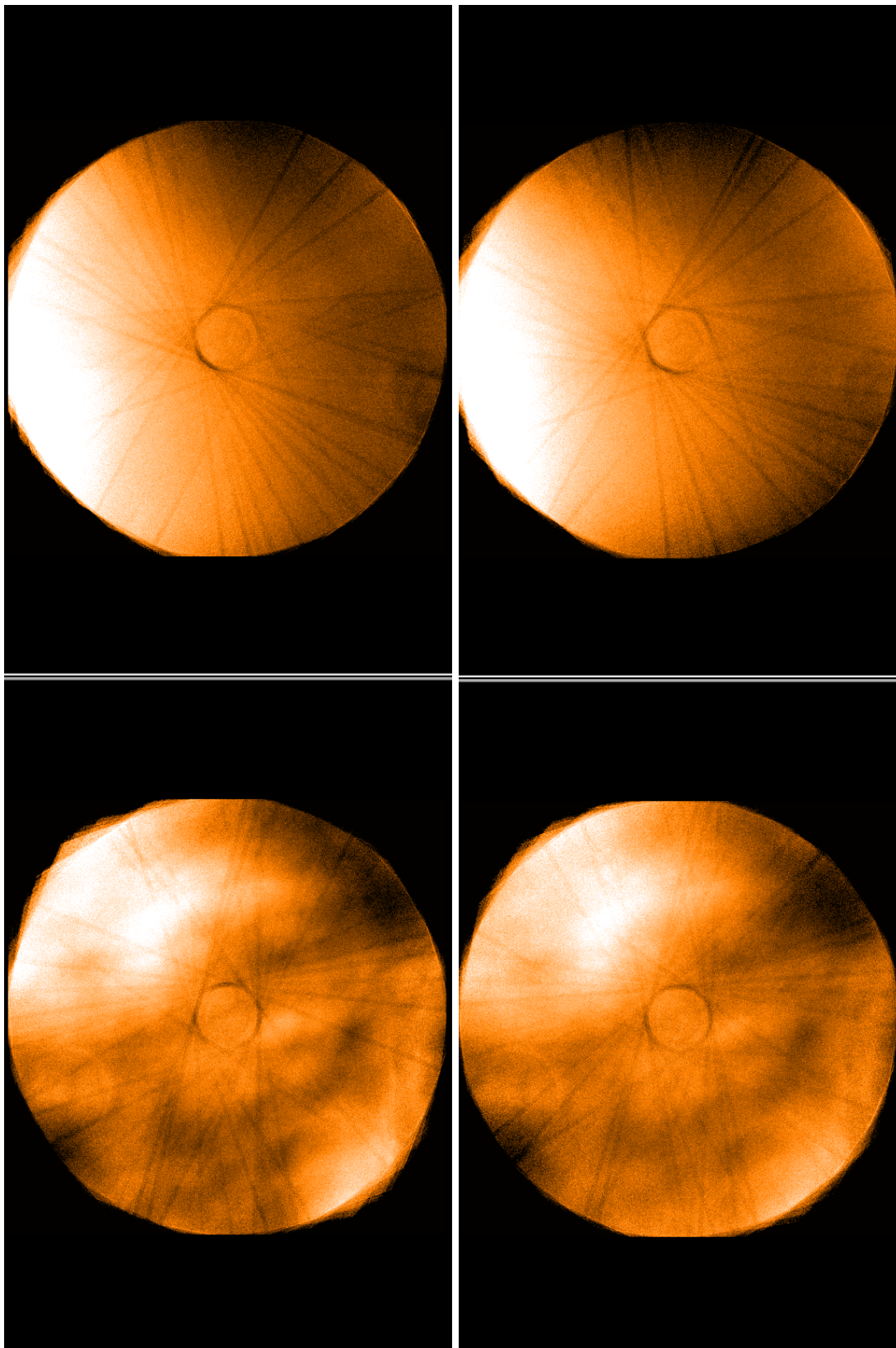


Figure 1: Comparison of b_HIGH (left) and v_HIGH (right) flat fields, before (bottom) and after (top) the exchange of the LADC.

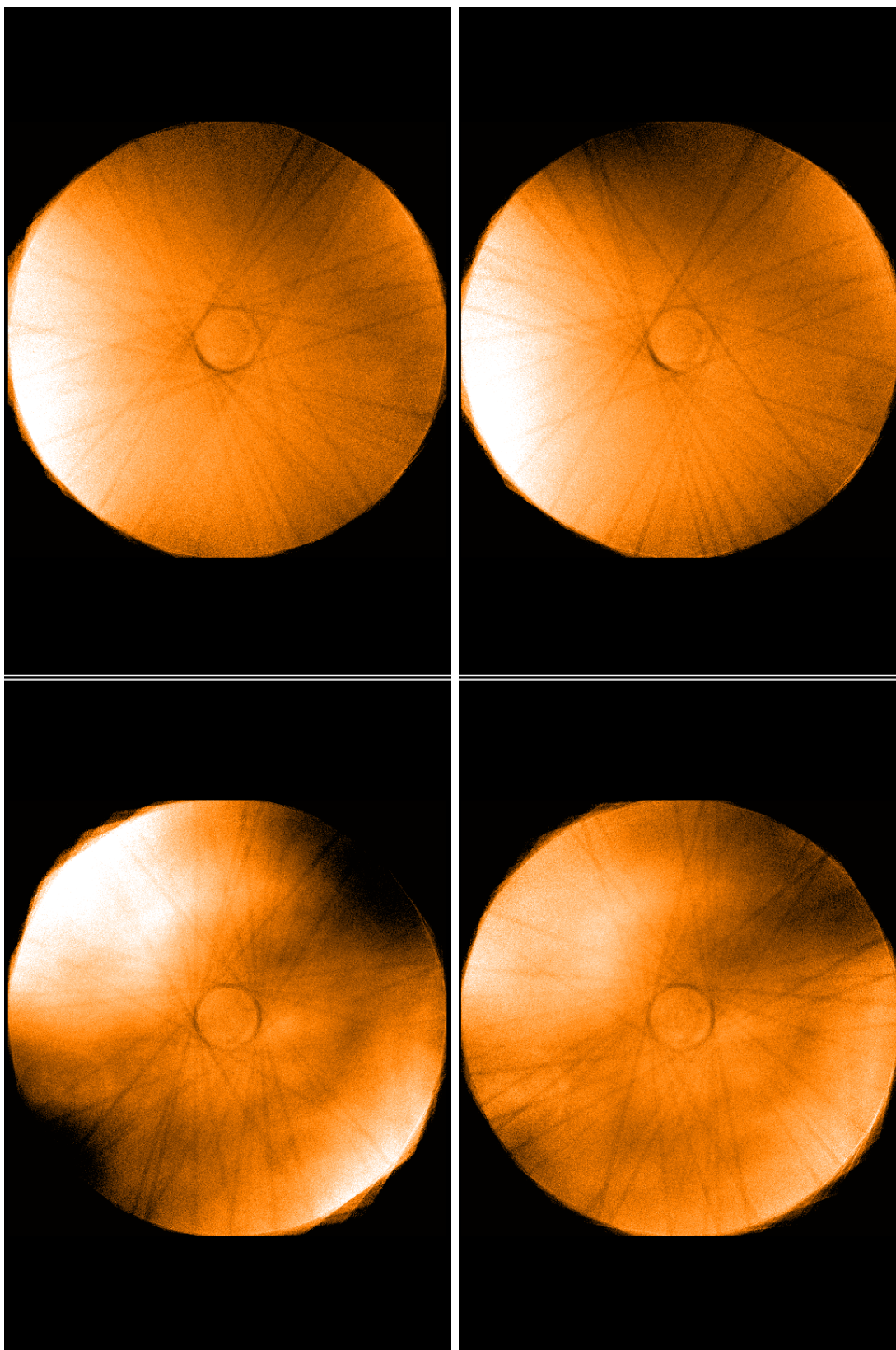


Figure 2: Comparison of *R_SPECIAL* (left) and *I_BESS* (right) flat fields, before (bottom) and after (top) the exchange of the LADC.