# Wavelength Dependence Calibration of HMI: Status and impact on LOS observables

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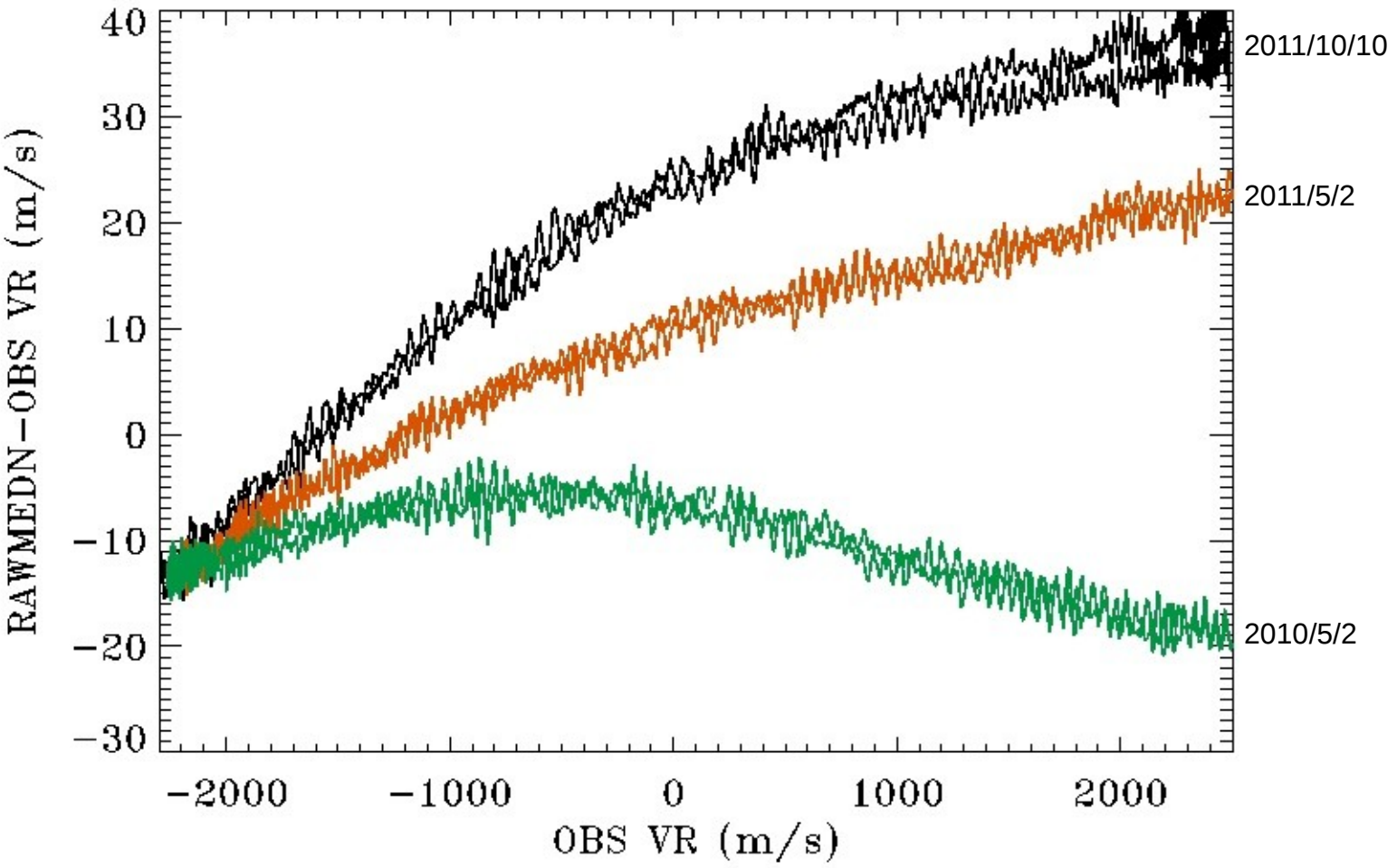
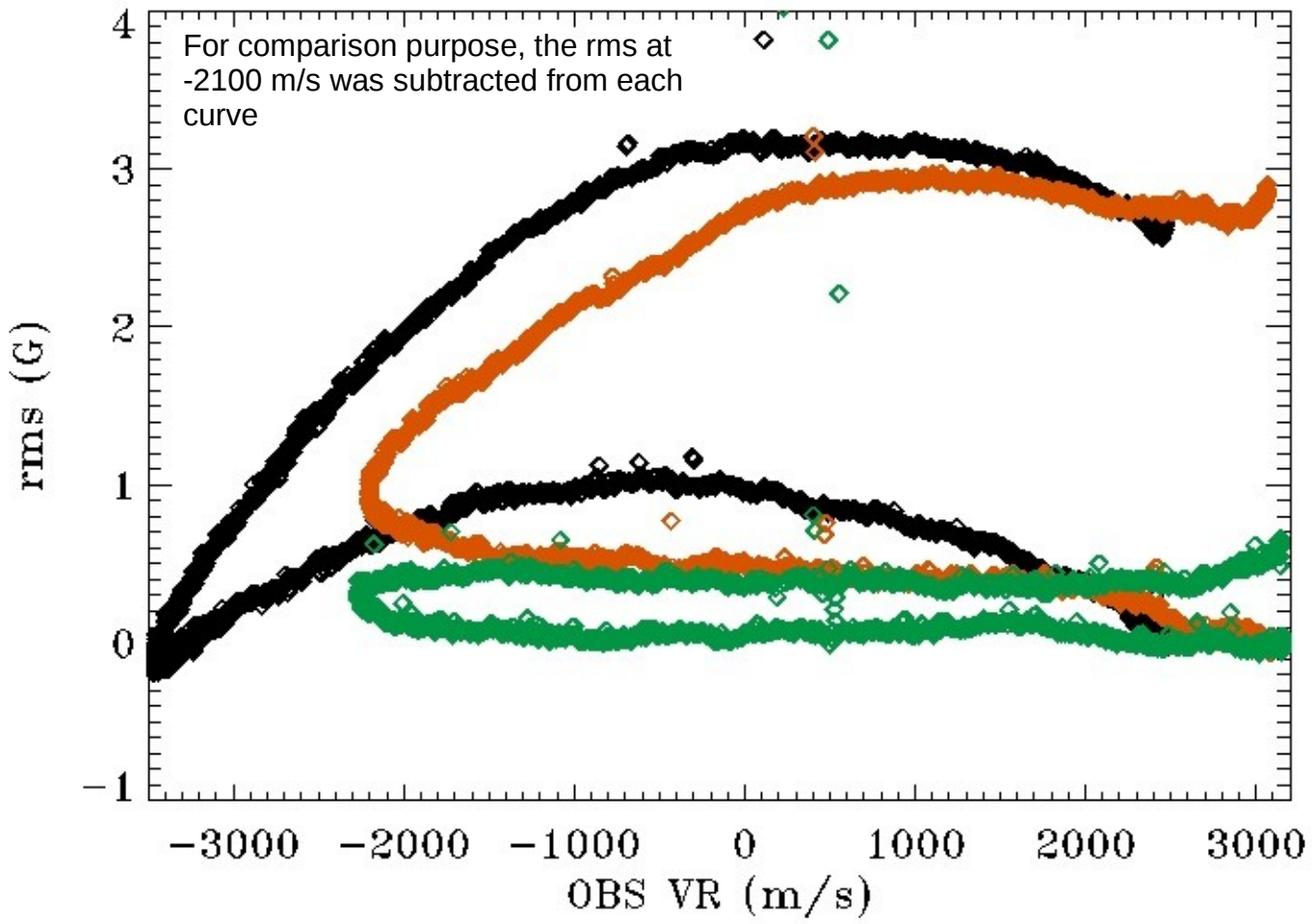
# A Few Known Issues With the LOS Observables (I)



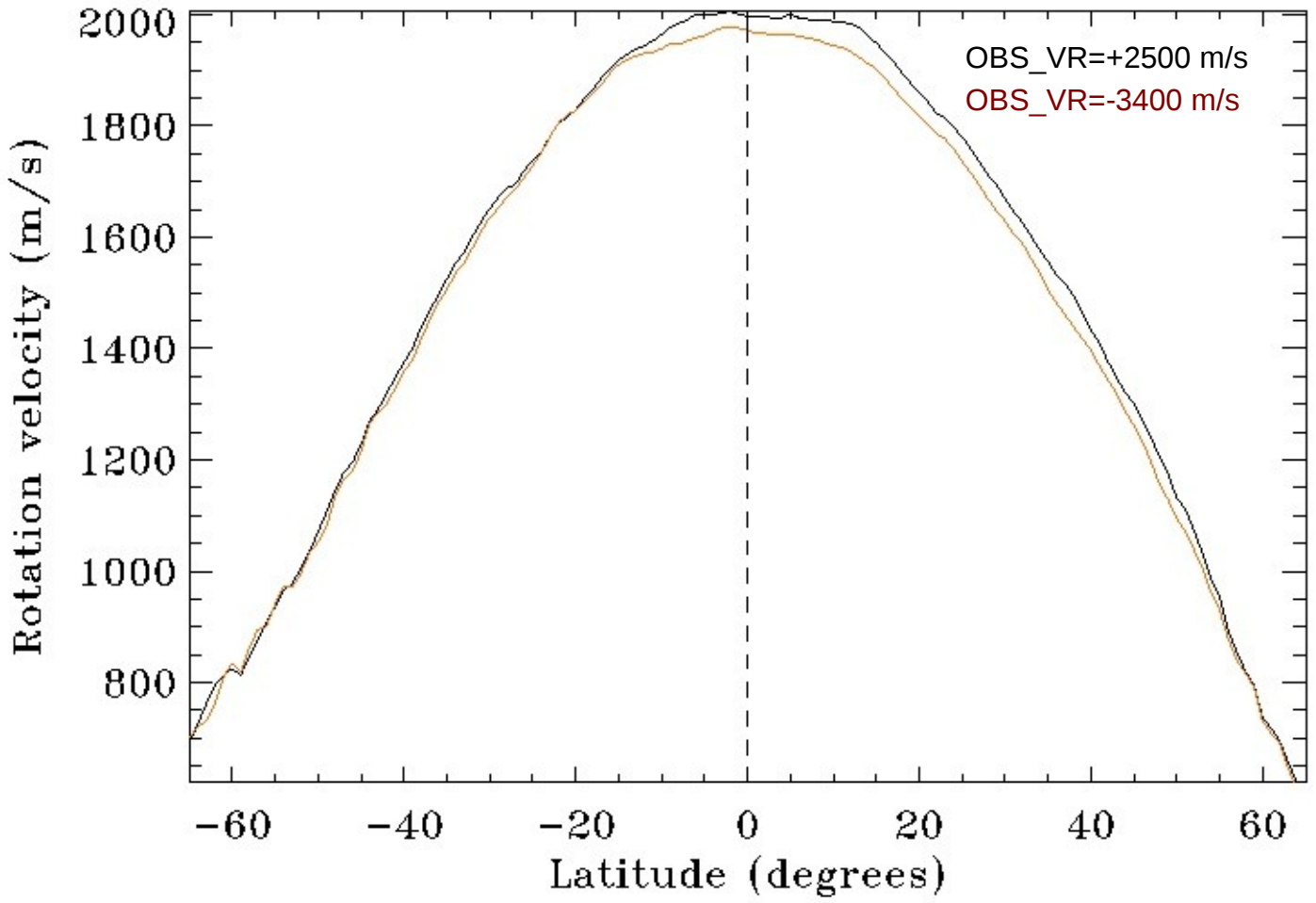

Daily variation in the Doppler velocity, and its evolution since the SDO launch

# Known Issues With the LOS Observables (II)



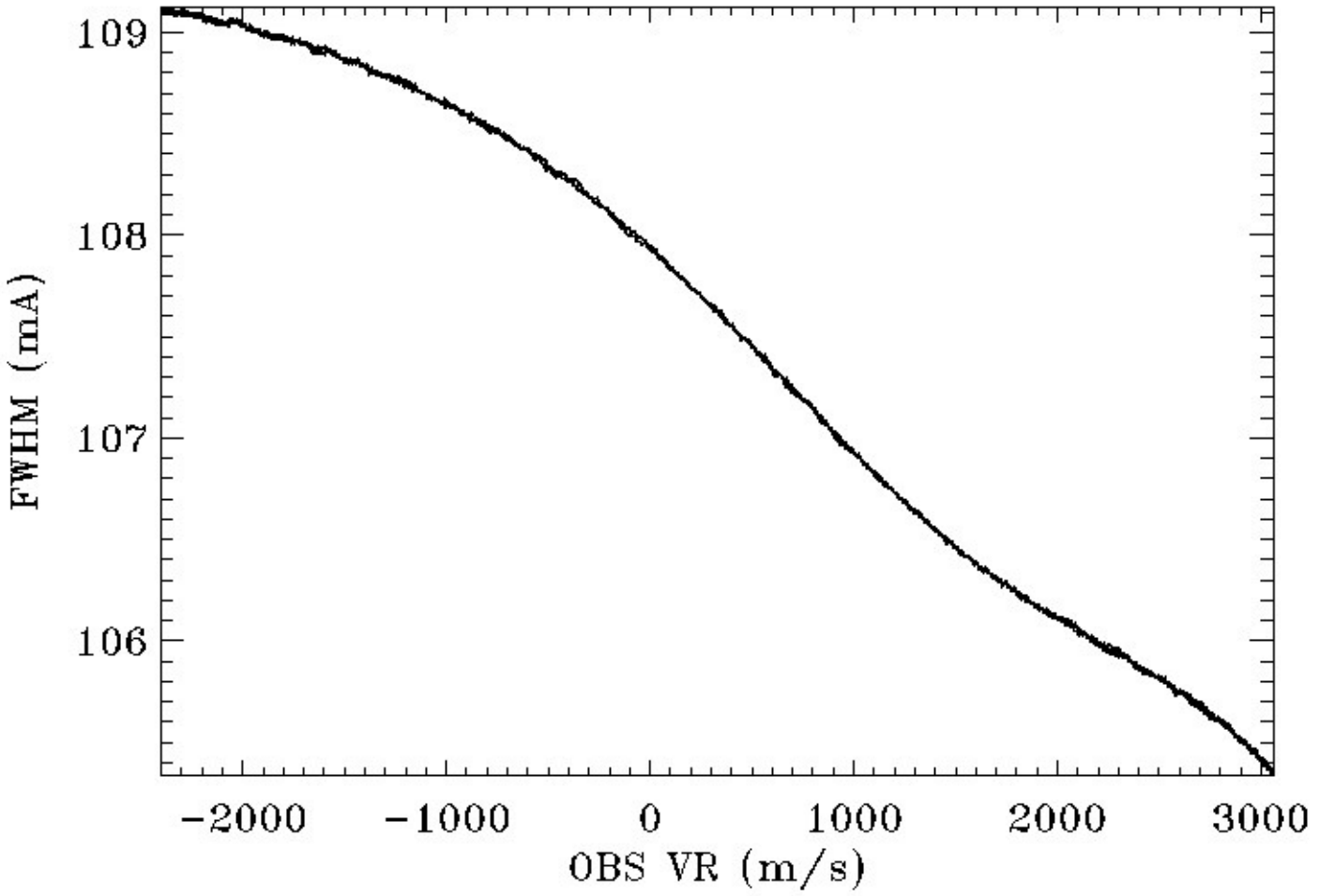

Daily variation in the rms variation of the LOS magnetograms and its evolution since the SDO launch

# Known Issues With the LOS Observables (III)



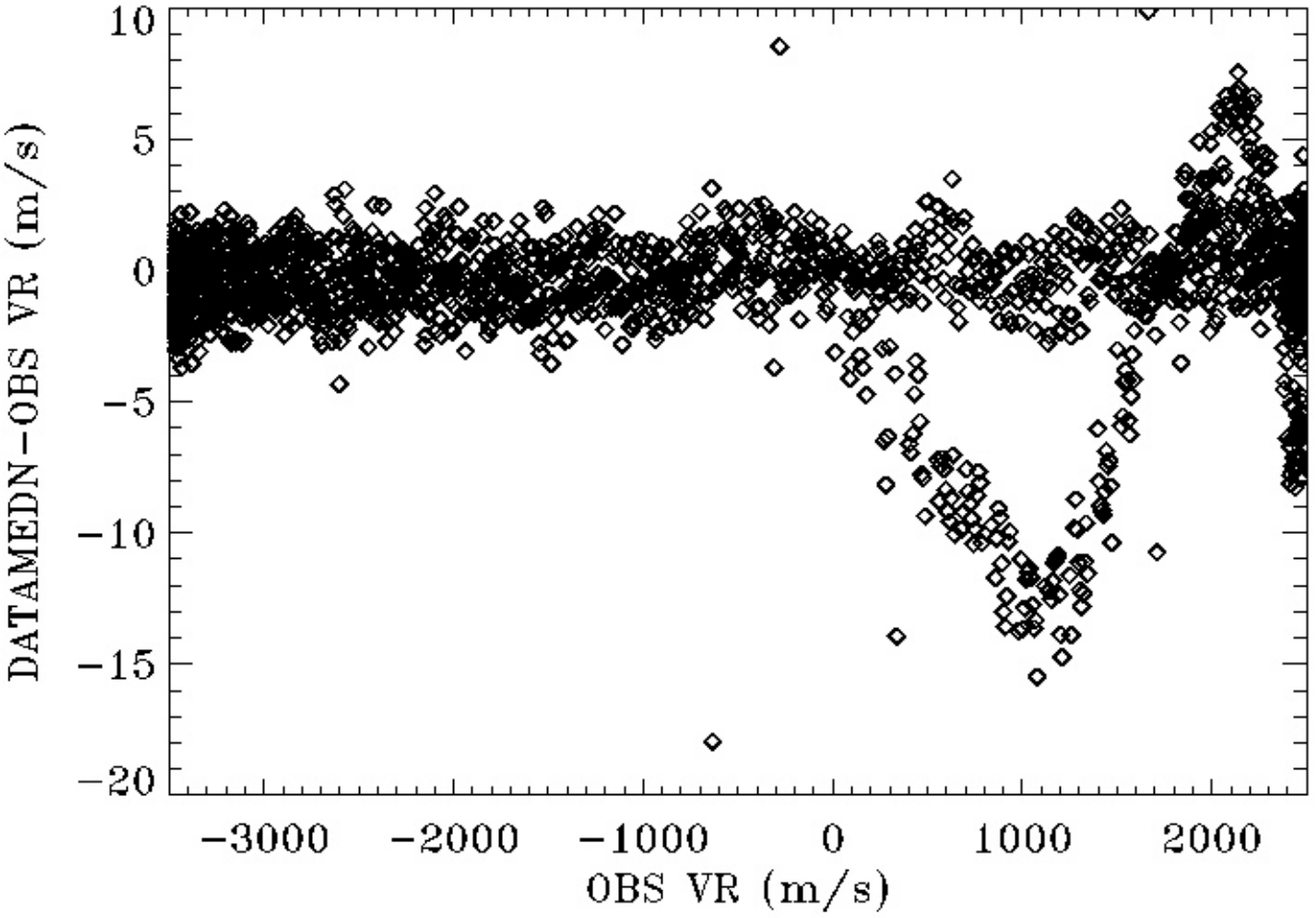

Daily variation in the rotation velocity (for October 10, 2010: mean rotation rate at the equator = 1993.8 m/s, p-2-p variation=44 m/s)

# Known Issues With the LOS Observables (IV)



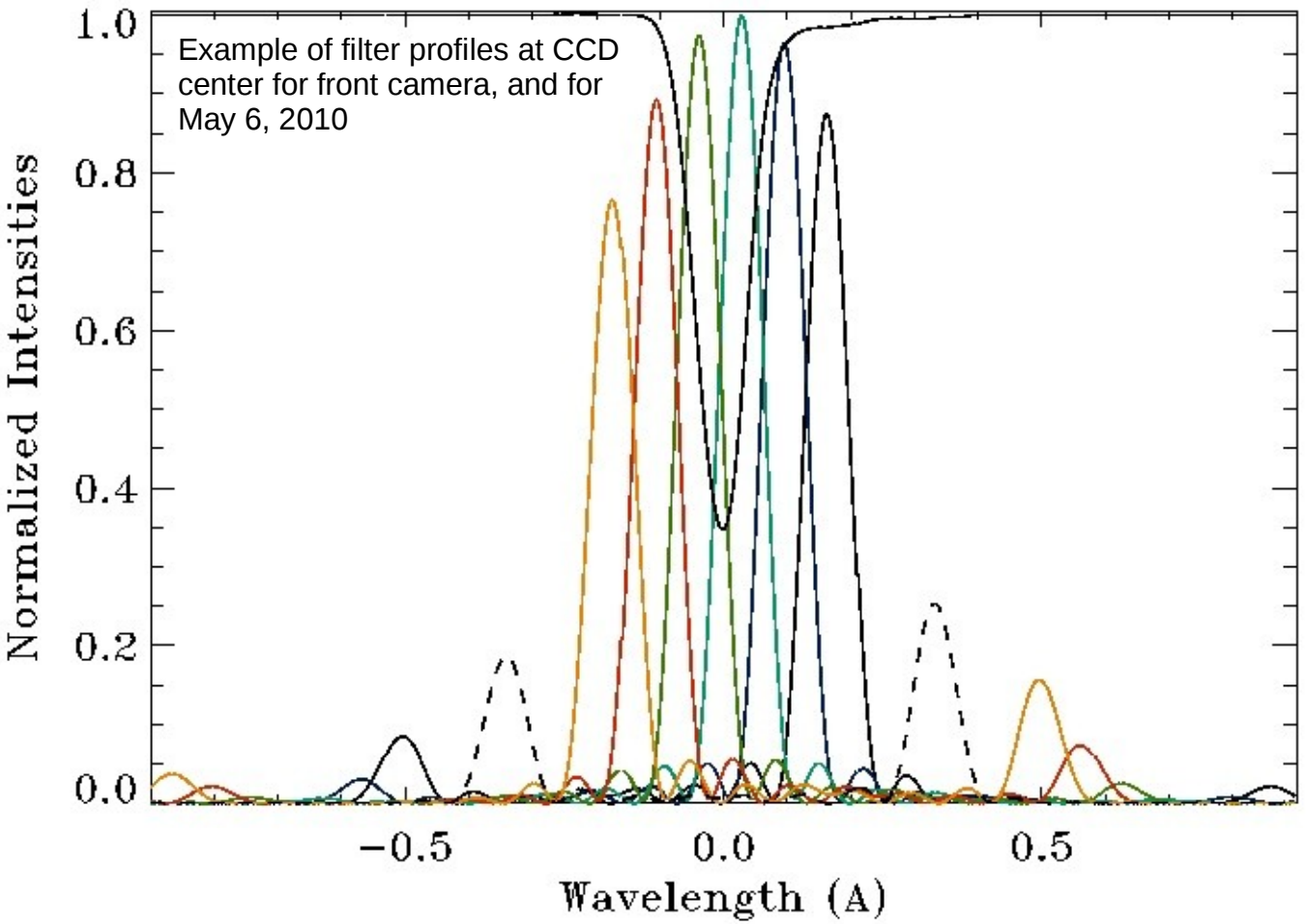

Absence of calibration of the linewidth, linedepth, and continuum intensity (unlike Doppler velocity and LOS magnetograms)

# Known Issues With the LOS Observables (V)



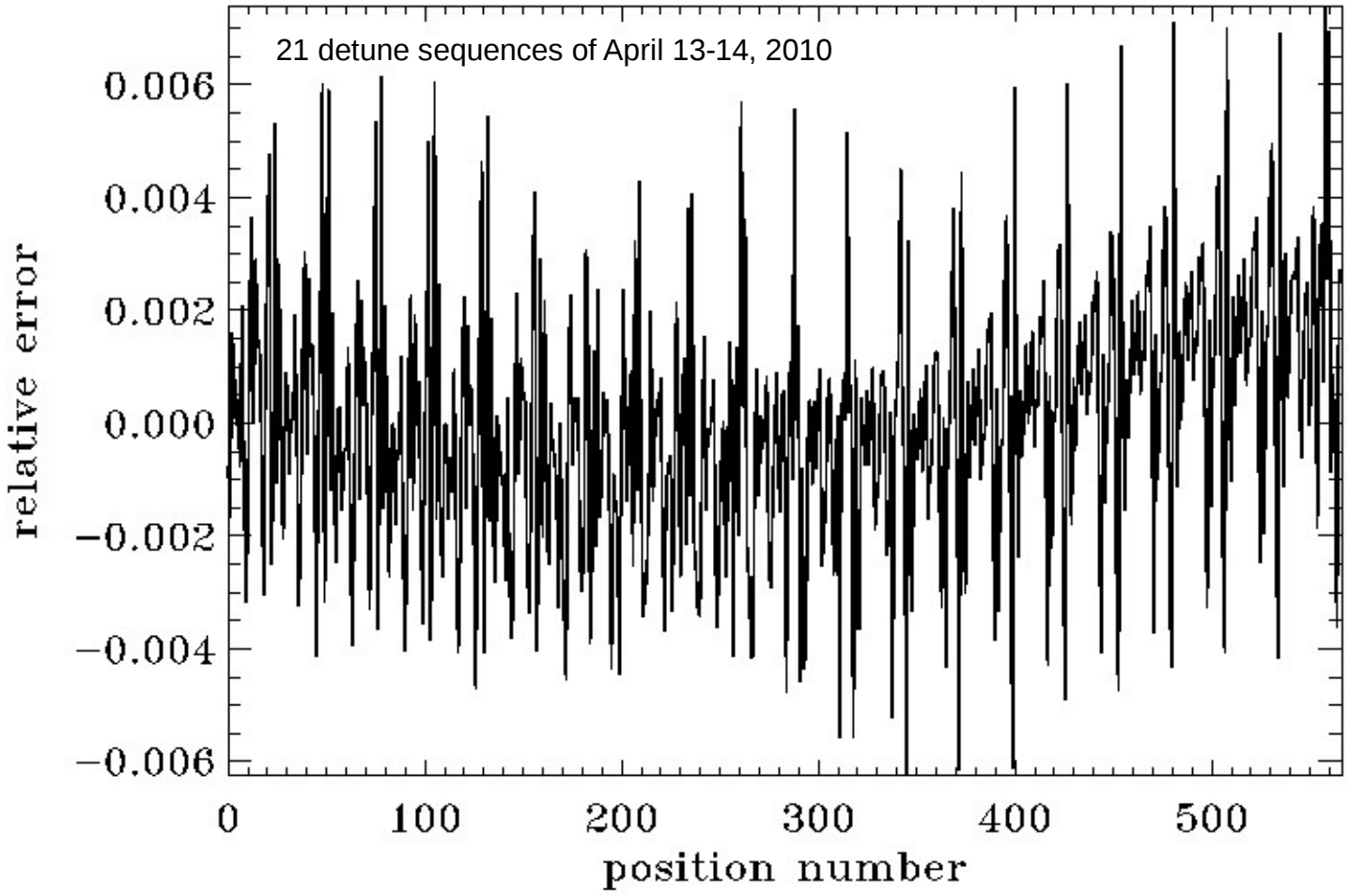

Roll data of October 12, 2010 show spatial dependence of error on Doppler velocity

# Improving the Wavelength Dependence Calibration: Filter Transmission Profiles



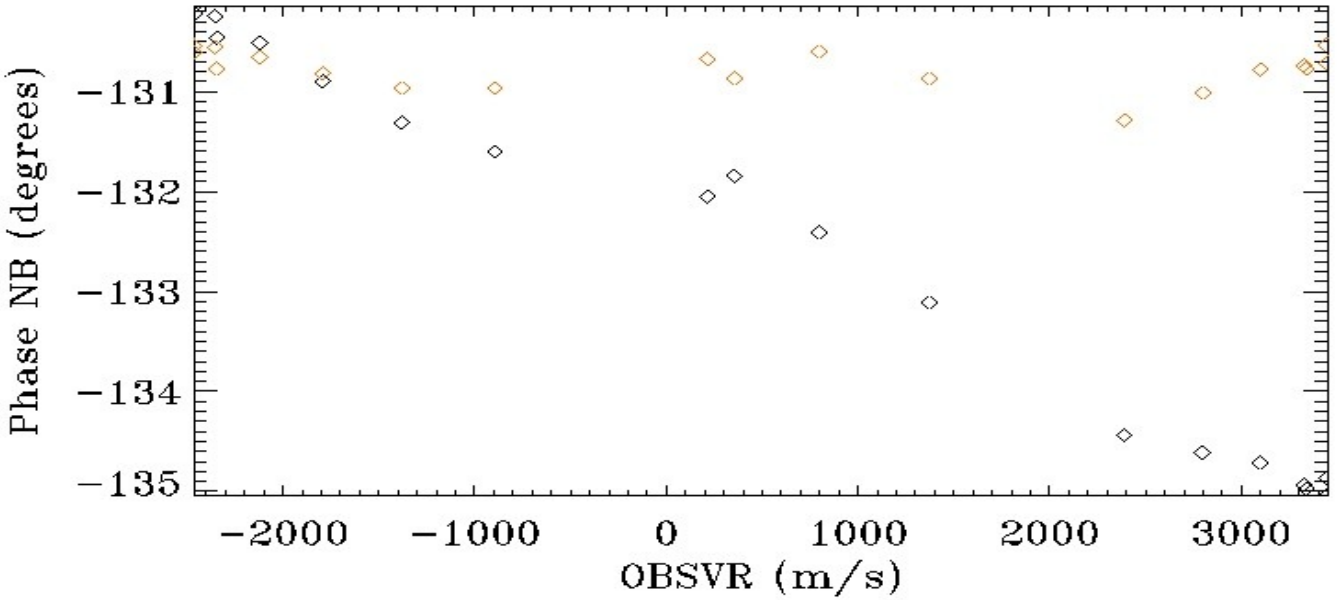

Current effort is focused on improving the filter transmission profiles using calibration sequences taken on orbit. Already, when fitting for these profiles, I-ripples, a better Voigt profile, and the non-linearity of the cameras have been added.

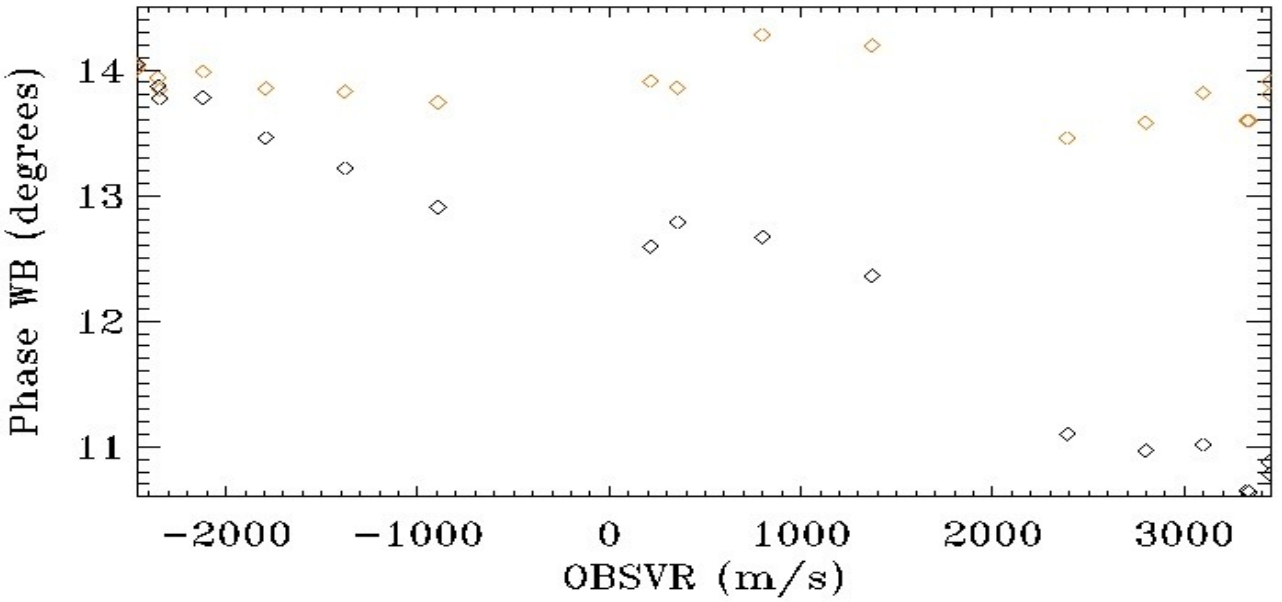
# Example of Detune Sequences Fitting




We fit several detunes at once instead of the individual ones, with 16 parameters, but something is still missing in the model.

# Example of Recent Improvement in the Wavelength Dependence Calibration: Tunable Elements FSRs



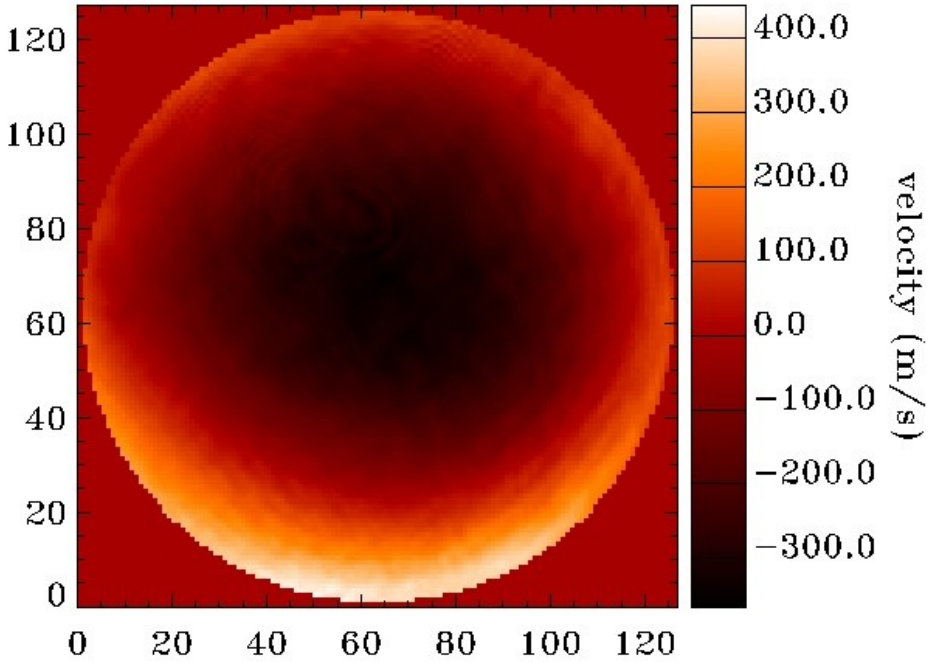



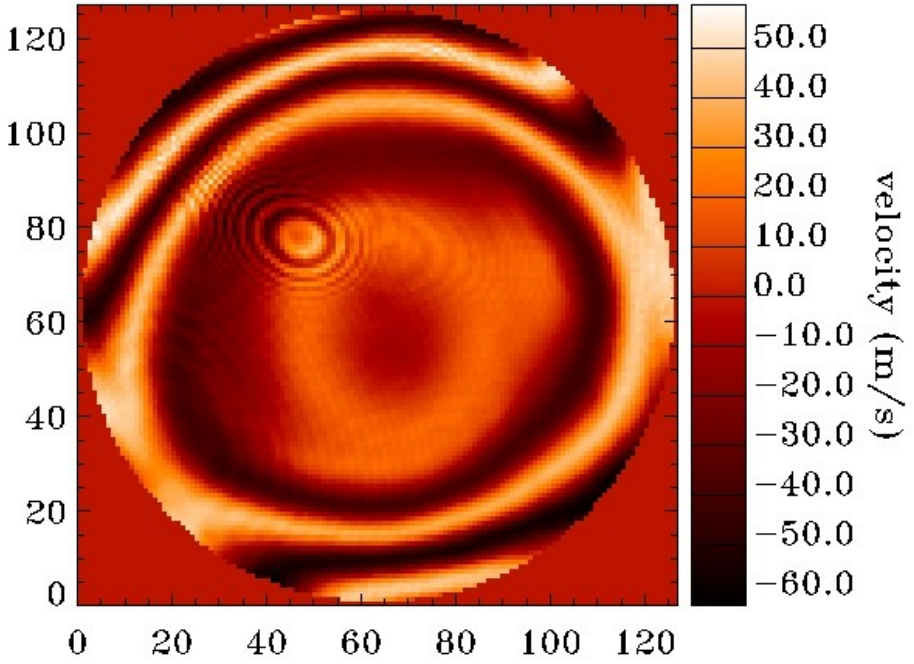

Detunes of April 13-14, 2010

Black= phases of the Michelsons with the full spectral ranges (FSR) currently used

red= phases with improved FSRs

# Example of Recent Improvement: Fringe pattern

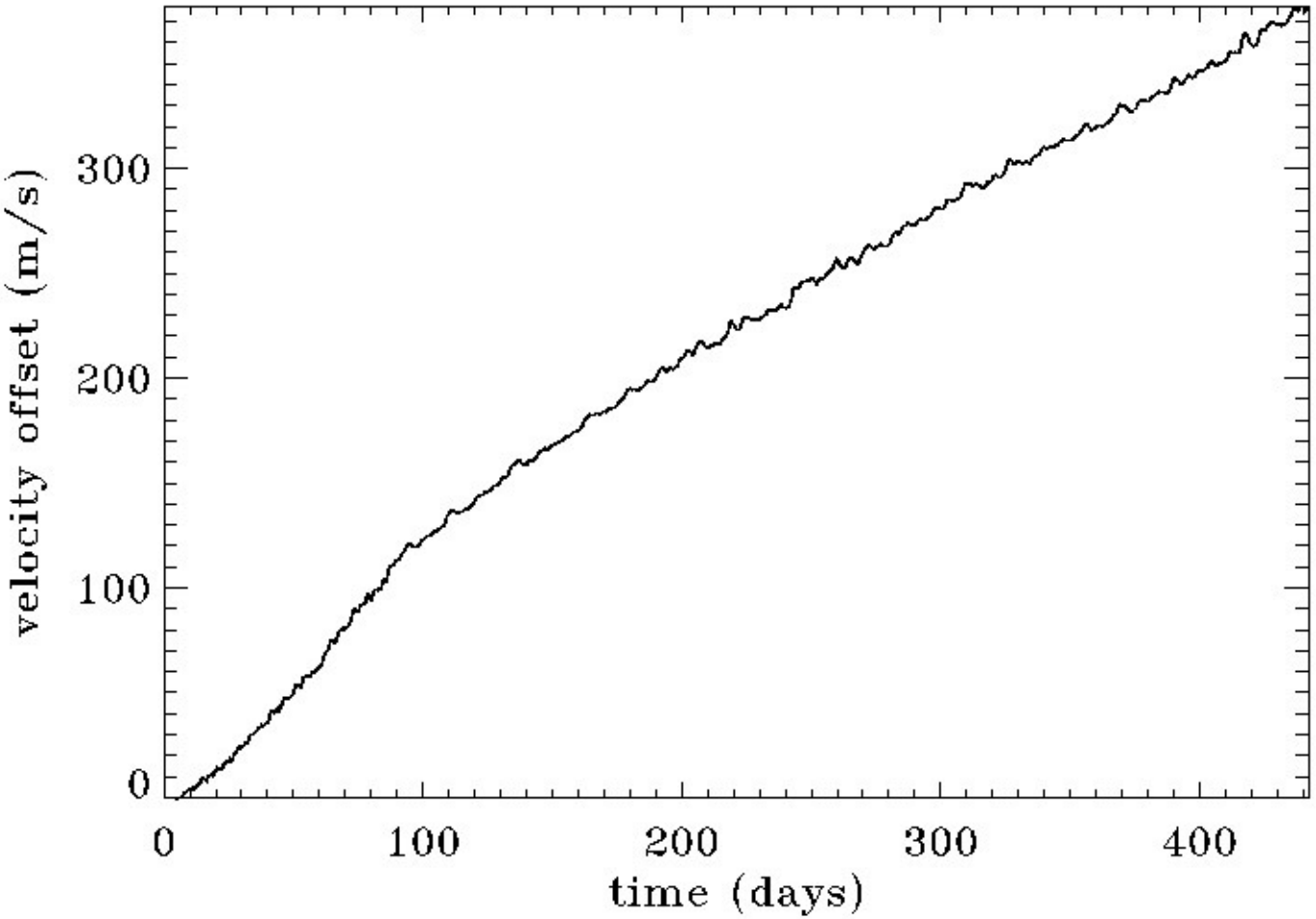



The interference fringes produced by the front window are propagated onto the Dopplergrams because of the look-up tables.

Jesper wrote a code to correct these look-up tables

# Example of Use of the regular Calibration Sequences: Monitoring the wavelength drift of the Michelsons




Only the broad-band Michelson is drifting significantly.
A regular retuning of the instrument is required.