[ 1] 'v\_ibio\_Colorimetry': .......................................... [000.34 secs] Internal validation: PASSED ; Runtime status: NO EXCEPTION RAISED ; Fast validation: NoTest ; Full validation: PASSED ;

[ 2] 'v\_ibio\_stockman2xyz': ......................................... [000.33 secs] Internal validation: PASSED ; Runtime status: NO EXCEPTION RAISED ; Fast validation: NoTest ; Full validation: PASSED ;

[ 3] 'v\_ibio\_cmCurrentImpulse': ..................................... [017.74 secs] Internal validation: PASSED ; Runtime status: NO EXCEPTION RAISED ; Fast validation: NoTest ; Full validation: FAILED ;

Different numbers. Not sure why. Not looking yet because may go away when we fix up some of the understood issue below.

[ 4] 'v\_ibio\_cmosaic': .............................................. [000.60 secs] Internal validation: PASSED ; Runtime status: NO EXCEPTION RAISED ; Fast validation: NoTest ; Full validation: PASSED ;

[ 5] 'v\_ibio\_conesrect': ............................................ [001.90 secs] Internal validation: PASSED ; Runtime status: NO EXCEPTION RAISED ; Fast validation: NoTest ; Full validation: PASSED ;

[ 6] 'v\_PTBcalStructToIsetbioDisplayObjectAndBack': ................. [000.07 secs] Internal validation: PASSED ; Runtime status: NO EXCEPTION RAISED ; Fast validation: NoTest ; Full validation: PASSED ;

[ 7] 'v\_ibio\_DisplayColorConversion': ............................... [000.27 secs] Internal validation: PASSED ; Runtime status: NO EXCEPTION RAISED ; Fast validation: NoTest ; Full validation: PASSED ; (using custom tolerances for some fields);

[ 8] 'v\_ibio\_DisplayLUTinversion': .................................. [000.17 secs] Internal validation: PASSED ; Runtime status: NO EXCEPTION RAISED ; Fast validation: NoTest ; Full validation: PASSED ;

[ 9] 'v\_ibio\_PTBcalStructToIsetbioDisplayObjectAndBack': ............ [000.05 secs] Internal validation: PASSED ; Runtime status: NO EXCEPTION RAISED ; Fast validation: NoTest ; Full validation: PASSED ;

[ 10] 'v\_ibio\_eyeMovementsPhysio': ................................... [000.00 secs] Internal validation: PASSED ; Runtime status: NO EXCEPTION RAISED ; Fast validation: NoTest ; Full validation: PASSED ;

[ 11] 'v\_ibio\_HumanRetinalIlluminance580nm': ......................... [000.18 secs] Internal validation: FAILED ; Runtime status: NO EXCEPTION RAISED ; Fast validation: NoTest ; Full validation: FAILED ;

Numerical issue that seems clearly related to the change in behavior wrt lens transmittance. The internal validation failure is on an assert statment, not a failure of the code to run.

[ 12] 'v\_ibio\_OTFandPupilSize': ...................................... [017.51 secs] Internal validation: PASSED ; Runtime status: NO EXCEPTION RAISED ; Fast validation: NoTest ; Full validation: PASSED ;

[ 13] 'v\_ibio\_oi': ................................................... [001.91 secs] Internal validation: PASSED ; Runtime status: NO EXCEPTION RAISED ; Fast validation: NoTest ; Full validation: FAILED ;

Not computing the same answers to reasonable precision. Some of this may be that the lens transmittance is not being handled the same.

[ 14] 'v\_ibio\_oiTransmittance': ...................................... [000.26 secs] Internal validation: PASSED ; Runtime status: NO EXCEPTION RAISED ; Fast validation: NoTest ; Full validation: PASSED ;

Wavelength sampling differences in lens transmittance at the least. but also numerical differences because the lens transmittance is 1 on the isetcam branch.

[ 15] 'v\_ibio\_oiSequence': ........................................... [002.91 secs] Internal validation: FAILED ; Runtime status: NO EXCEPTION RAISED ; Fast validation: NoTest ; Full validation: FAILED ;

[ 16] 'v\_ibio\_osEMData': ............................................. [ NaN secs] Internal validation: FAILED ; Runtime status: EXCEPTION RAISED ; Fast validation: NoTest ; Full validation: NoTest ;

[ 17] 'v\_ibio\_osIncDec': ............................................. [ NaN secs] Internal validation: FAILED ; Runtime status: EXCEPTION RAISED ; Fast validation: NoTest ; Full validation: NoTest ;

[ 18] 'v\_ibio\_osLinearFilters': ...................................... [002.66 secs] Internal validation: PASSED ; Runtime status: NO EXCEPTION RAISED ; Fast validation: NoTest ; Full validation: PASSED ; (using custom tolerances for some fields);

[ 19] 'v\_ibio\_osStep': ............................................... [ NaN secs] Internal validation: FAILED ; Runtime status: EXCEPTION RAISED ; Fast validation: NoTest ; Full validation: NoTest ;

[ 20] 'v\_ibio\_osStepFlash': .......................................... [008.80 secs] Internal validation: PASSED ; Runtime status: NO EXCEPTION RAISED ; Fast validation: NoTest ; Full validation: PASSED ;

[ 21] 'v\_ibio\_osTimeStep': ........................................... [ NaN secs] Internal validation: FAILED ; Runtime status: EXCEPTION RAISED ; Fast validation: NoTest ; Full validation: NoTest ;

[ 22] 'v\_ibio\_IrradianceIsomerizations': ............................. [001.95 secs] Internal validation: PASSED ; Runtime status: NO EXCEPTION RAISED ; Fast validation: NoTest ; Full validation: PASSED ;

[ 23] 'v\_ibio\_rgcExternal': .......................................... [ NaN secs] Internal validation: FAILED ; Runtime status: EXCEPTION RAISED ; Fast validation: NoTest ; Full validation: NoTest ;

[ 24] 'v\_ibio\_rgcModels': ............................................ [ NaN secs] Internal validation: FAILED ; Runtime status: EXCEPTION RAISED ; Fast validation: NoTest ; Full validation: NoTest ;

[ 25] 'v\_ibio\_rgcPillowModelGainCheck': .............................. [ NaN secs] Internal validation: FAILED ; Runtime status: EXCEPTION RAISED ; Fast validation: NoTest ; Full validation: NoTest ;

[ 26] 'v\_ibio\_statsPoisson': ......................................... [ NaN secs] Internal validation: FAILED ; Runtime status: EXCEPTION RAISED ; Fast validation: NoTest ; Full validation: NoTest ;

[ 27] 'v\_ibio\_wvfComputeConePSF': .................................... [003.39 secs] Internal validation: PASSED ; Runtime status: NO EXCEPTION RAISED ; Fast validation: NoTest ; Full validation: FAILED ;

[ 28] 'v\_ibio\_wvfDiffractionPSF': .................................... [001.11 secs] Internal validation: PASSED ; Runtime status: NO EXCEPTION RAISED ; Fast validation: NoTest ; Full validation: FAILED ;

Very small numerical discrepancies. We could add a tolerance to the tests of fractional diff of 0.001 and they would pass, I think. The differences may have to do with the support on

which the functions are being computed - that is just a wild conjecture, however.

[ 29] 'v\_ibio\_wvfSpatialSampling': ................................... [000.59 secs] Internal validation: PASSED ; Runtime status: NO EXCEPTION RAISED ; Fast validation: NoTest ; Full validation: FAILED ;

The arcmin variables are OK within 0.1%, but the PSFs differ by more than that. Once other stuff gets fixed up, we can check those more carefully.

[ 30] 'v\_ibio\_wvfStilesCrawford': .................................... [000.30 secs] Internal validation: PASSED ; Runtime status: NO EXCEPTION RAISED ; Fast validation: NoTest ; Full validation: FAILED ;

[ 31] 'v\_ibio\_wvfZernikePolynomials': ................................ [001.61 secs] Internal validation: PASSED ; Runtime status: NO EXCEPTION RAISED ; Fast validation: NoTest ; Full validation: FAILED ;

Had to comment out some broken wvfPlot calls. These need to be fixed but are not a numerical issue per se.

The pupil function is being vignetted by a different aperture, causing all sorts of pain.

Looks like oi padding convention differs between ISETBio and ISETCam, which produces big differences in the photons because of the edge effects.

Worried about needing to call wvfComputePupilFunction and wvfComputePSF over and over again. Used to be cached for speed.