



Photometric Comparison of SECCHI HI-1 and LASCO C3

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21st STEREO Science Working Group
Trinity College, Dublin, Ireland
March 22-26 2010



Summary

- Introduction to SECCHI HI-1 and LASCO C3
- Star Comparison
 - Semi-Simultaneous
 - Non-Simultaneous
- CME Mass Comparison
- Conclusions

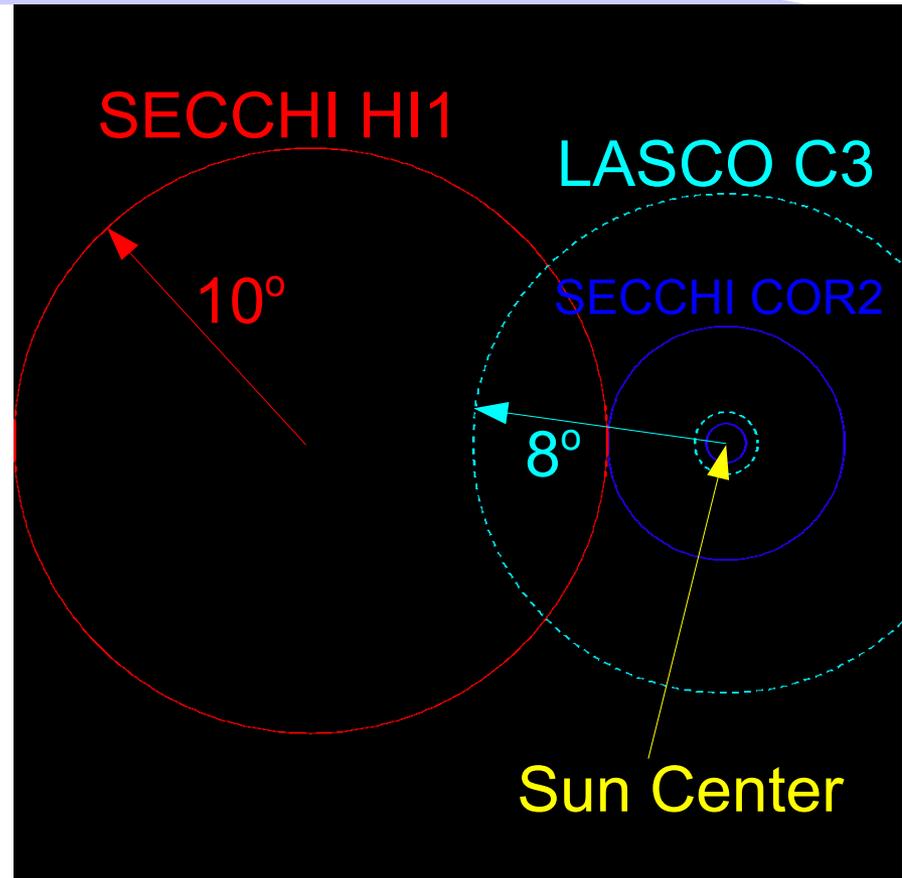


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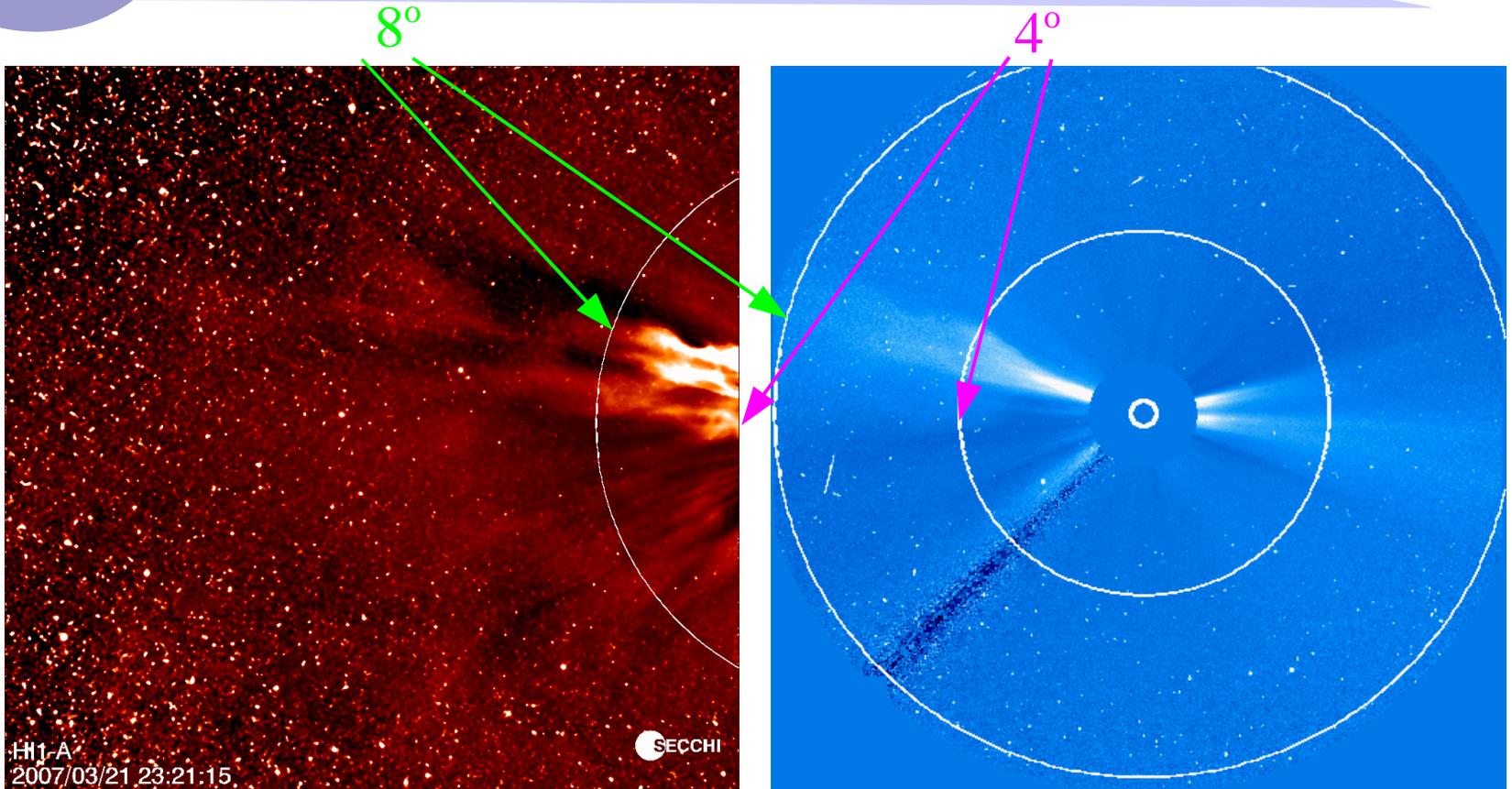


Field of View Overlap

- LASCO C3 FOV
 - Sun center to 8°
- SECCHI HI1 FOV
 - 4° to 24°
- Overlap in FOV
 - 4° to 8°



4° of Overlap

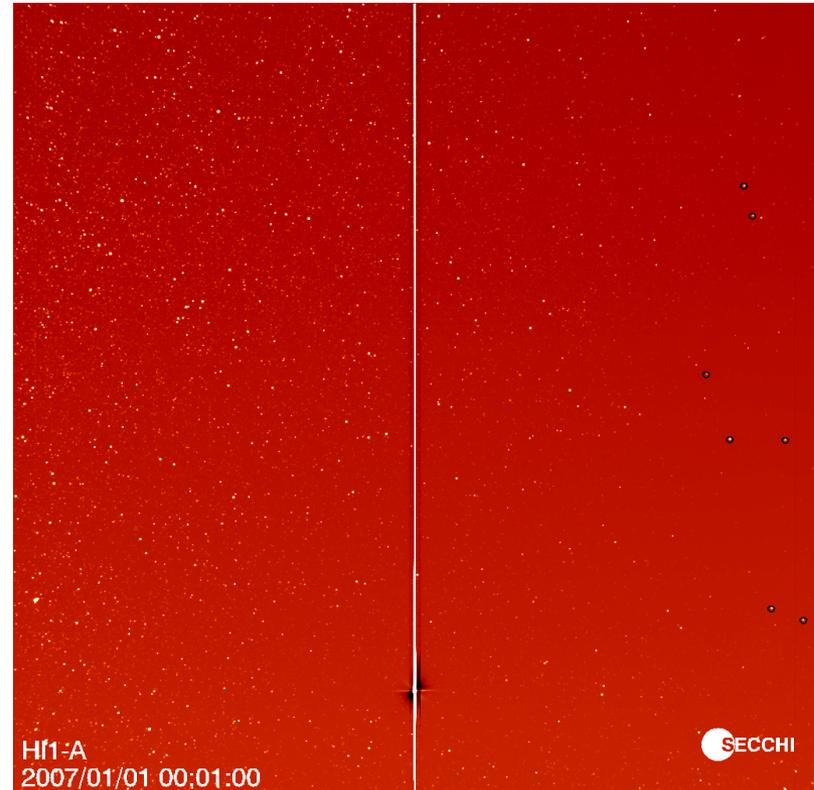


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Star Calibration

- LASCO C3 Level-1 data
- SECCHI HI1 data
 - secchi_prep, /calfac_off
- Stars with magnitudes less than 6.0
- Star sample : 4 pix radius
- Background : 5-6 pix radius

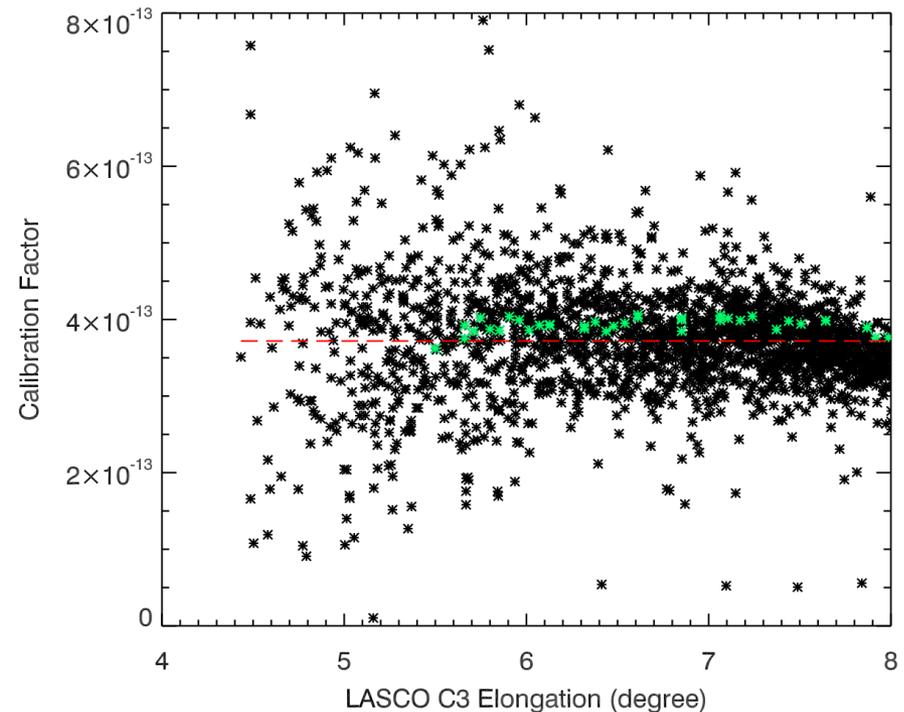


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Semi-Simultaneous Star Comparison

- Only in HI1-A
01-Jan-2007
20-Feb-2007
- Used 82 stars with
2,091 measurements
- Found scale factor of
 3.7×10^{-13}

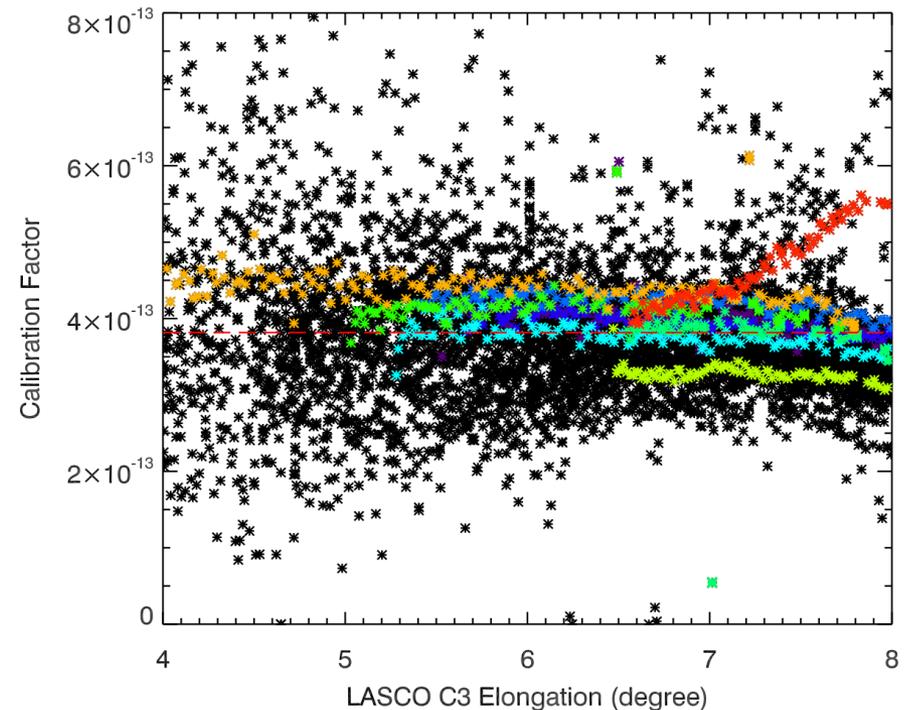


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Non-Simultaneous Star Comparison

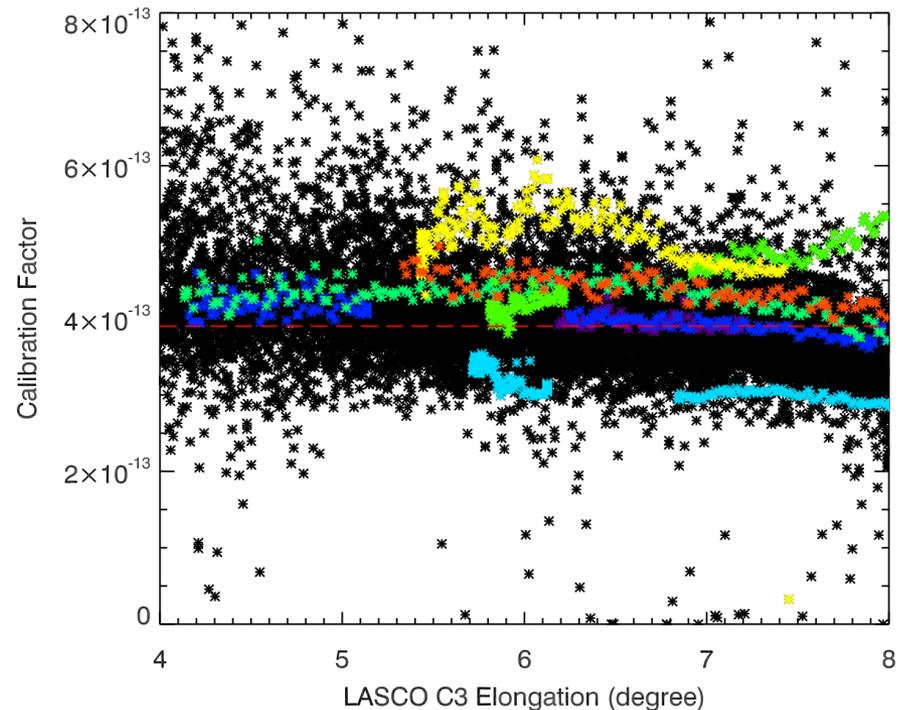
- HI1-A : 05-Apr-2008 to 30-Apr-2008
- C3 : 29-Apr-2008 to 29-May-2008
- Used 82 stars with 6,958 measurements
- Found scale factor of 3.8×10^{-13}



Non-Simultaneous Star Comparison

- HI1-B : 01-Jul-2008 to 31-Jul-2008
- C3 : 05-May-2008 to 28-Jun-2008
- Used 106 stars with 13,897 measurements
- Found scale factor of

3.9×10^{-13}



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CME Mass Comparison

- Excess mass
- Box $2.5^\circ \times 2.5^\circ$
- Used 4 CMEs
 - 21-MAR-2007
 - 19-Apr-2007
 - 15-May-2007
 - 31-Dec-2007

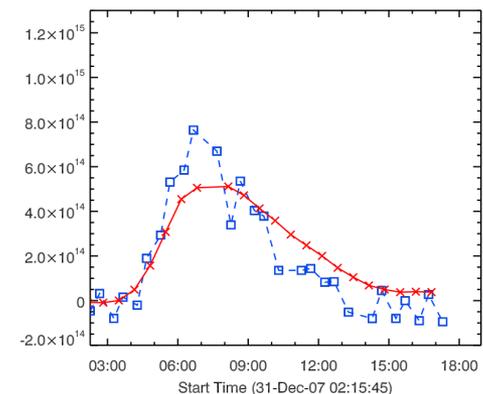
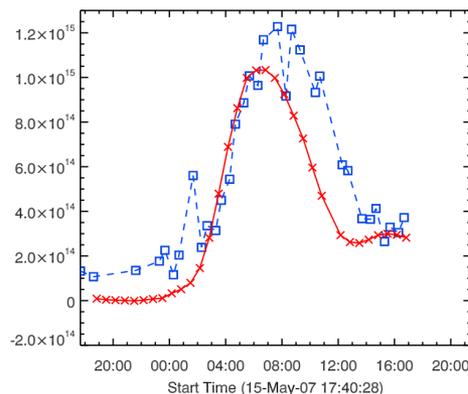
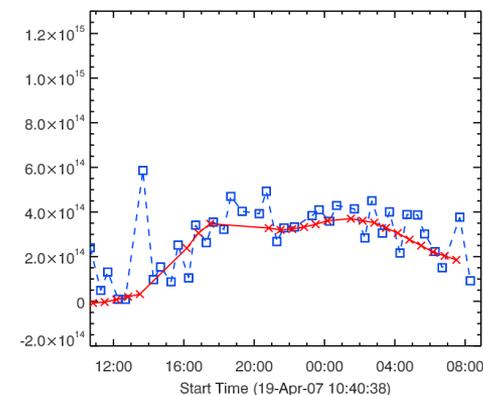
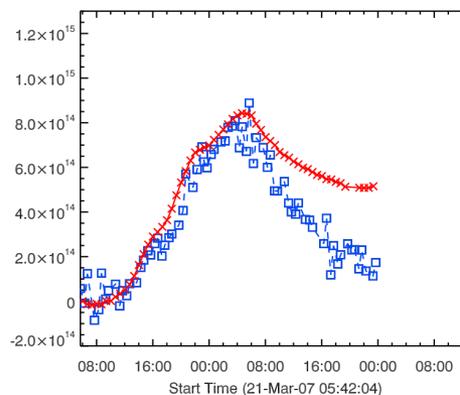


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CME Mass Comparison

- Only for HI1-A
- Measured excess mass versus time
- HI1-A : red
- C3 : blue
- Good agreement



Conclusions

- Calculated calibration factor by comparing stars in HI1 and C3
- Verified calibration factor by comparing CME excess mass
- Found calibration factor of

Ahead : 3.8×10^{-13} DN/MSB

Behind : 3.9×10^{-13} DN/MSB

