

De-biasing of the velocity determination for double station meteor observations from CILBO

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1. Introduction
2. Velocity determination bias
3. Summary / Outlook

1 Introduction

- CILBO's detection software: MetRec (Molau 1998)
 - Software detects meteor
 - Each video frame: determine photometric center and brightness

1 Introduction

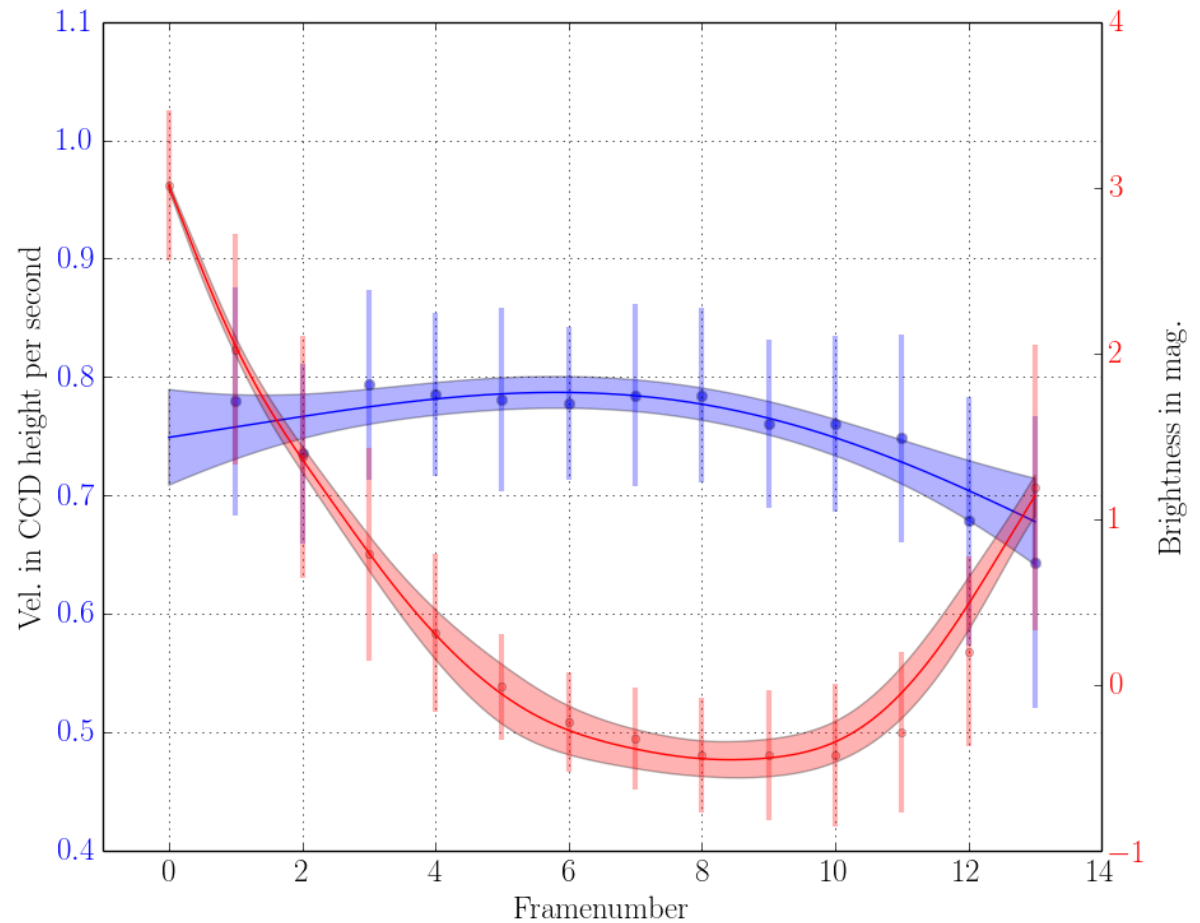
- Very bright meteors: cameras in saturation
- Perseids: persistent trails
- Atmospheric drag
- Is the velocity determination biased?
- Does the velocity determination varies, depending on brightness, angular velocity, ...?

1 Introduction



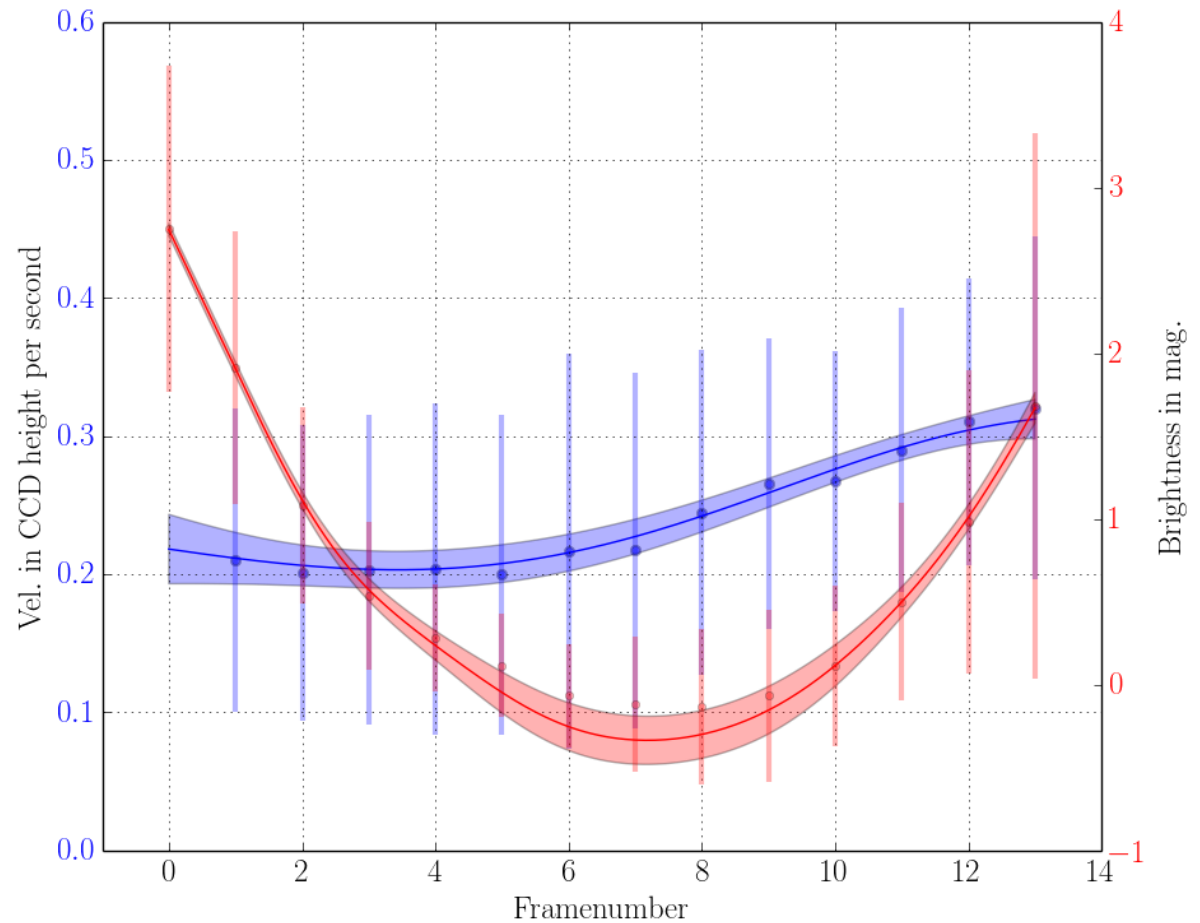
2 Veloc. det. bias

- All (not P&G)
 - 8 meteors
 - 0.5 – 1.0 U/s
 - -10 – 0 mag
- Bright and fast



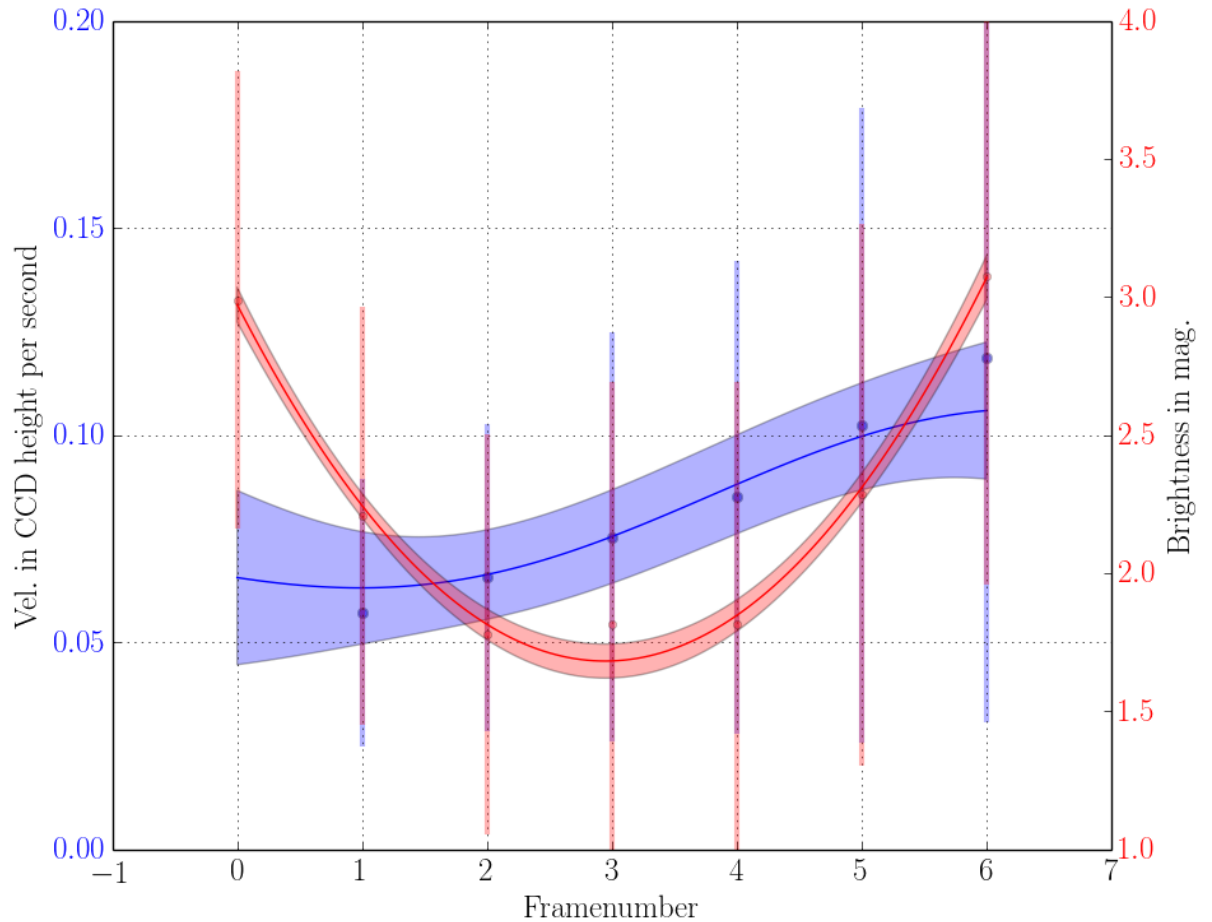
2 Veloc. det. bias

- All (not P&G)
 - 6 meteors
 - 0.0 – 0.5 U/s
 - -10 – 0 mag
- Bright and slow



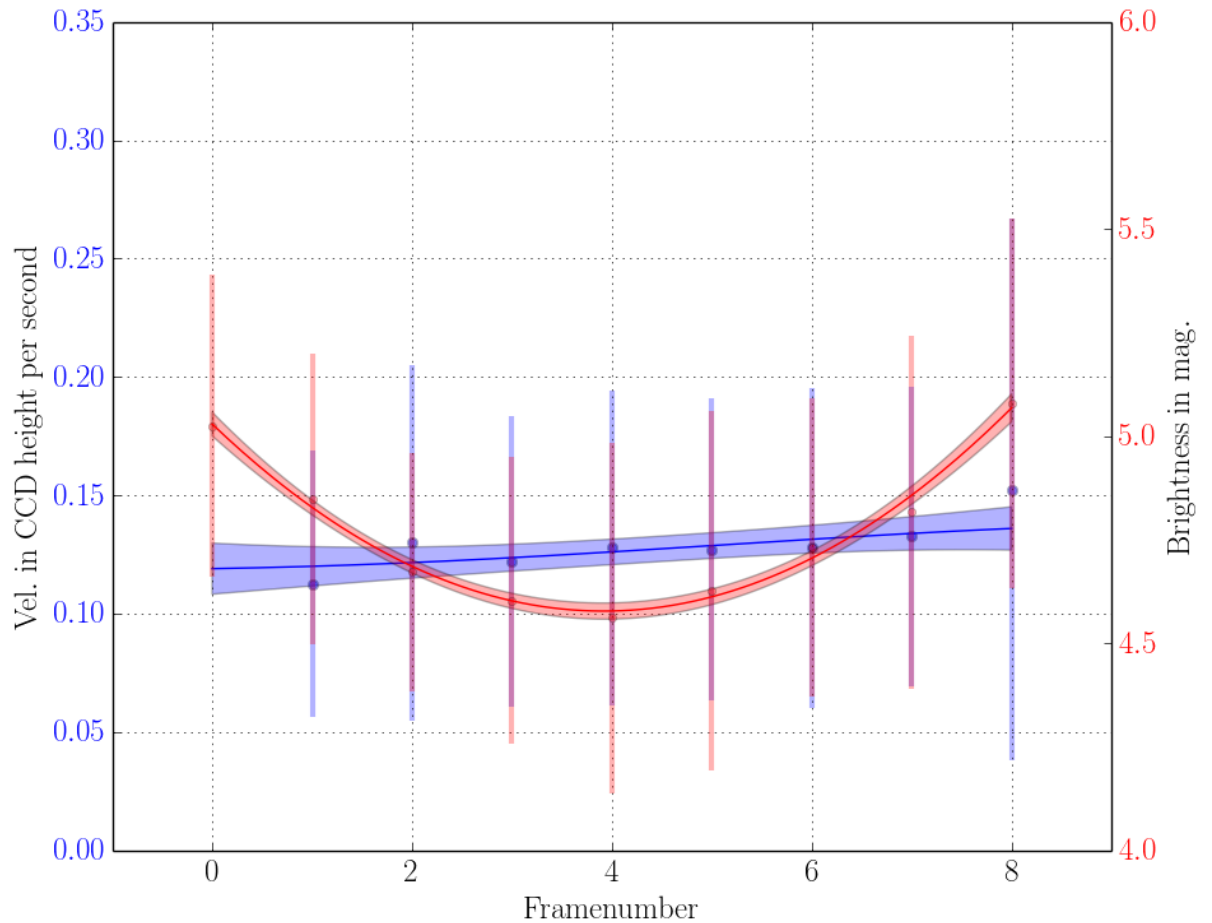
2 Veloc. det. bias

- All (not P&G)
 - 34 meteors
 - 0.0 – 0.1 U/s
 - 0 – 2 mag
- Bright and slow



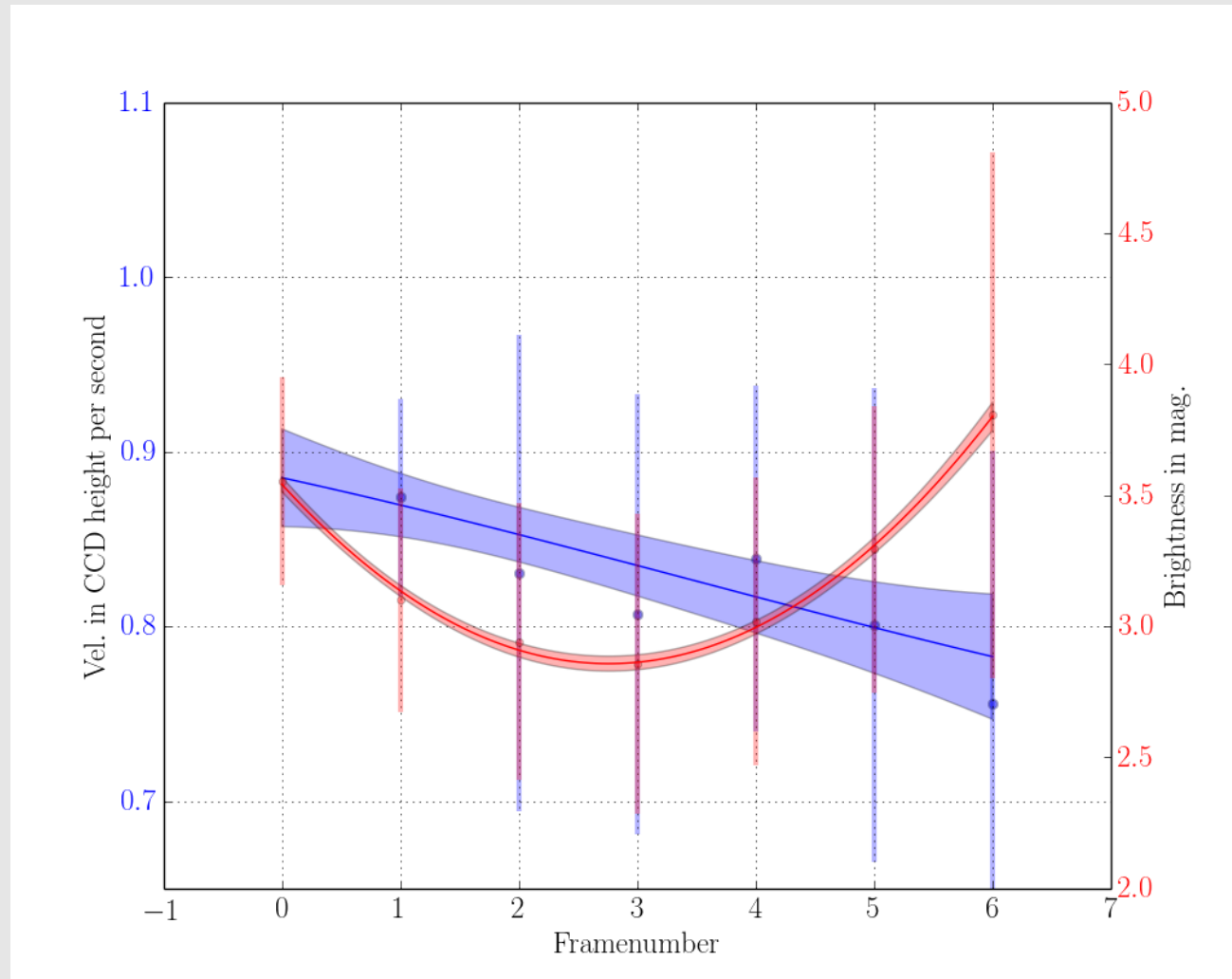
2 Veloc. det. bias

- All (not P&G)
 - 29 meteors
 - 0.0 – 0.25 U/s
 - 4 – 6 mag
- Faint and slow



2 Veloc. det. bias

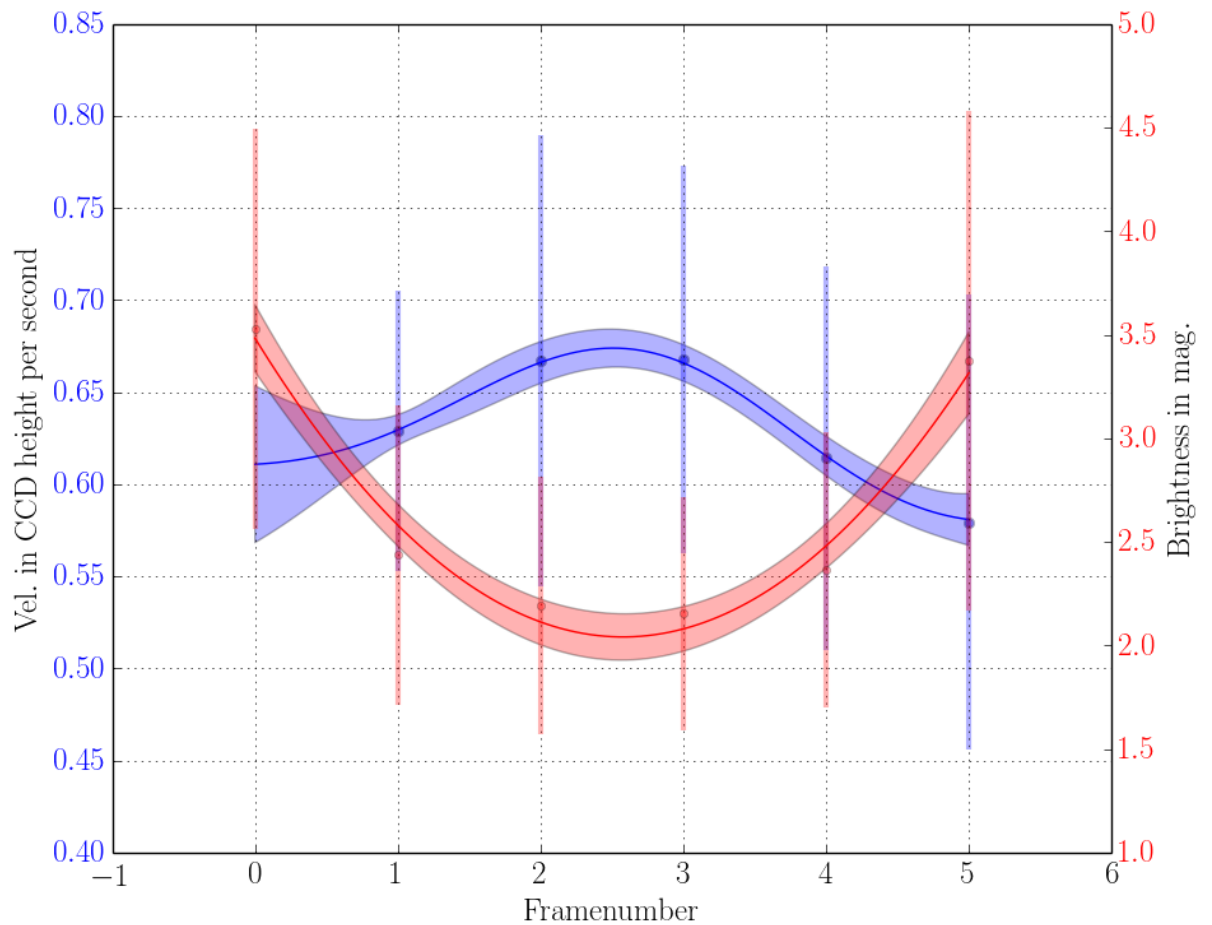
- All (not P&G)
 - 17 meteors
 - 0.75 – 1.00 U/s
 - 2 – 4 mag
- Intermediate and fast



2 Veloc. det. bias

- Perseids

- 11 meteors
- 0.50 – 0.75 U/s
- 0 – 6 mag



3.1 Summary

- All (but Gem. & Per.) - Velocity profile:
 - Very Bright and fast: Slightly bell-shaped
 - Very Bright and slow: Increasing
 - Intermed. and fast: Decreasing
 - Bright and slow: Increasing
 - Faint and slow: Constant

3.1 Summary

- Perseids: Show a bell-shaped velocity profile
- Geminids: Not enough data... no significant shape (constant?)

3.2 Outlook

- Improve the analysis with more data...
- Concept / Idea for a Master thesis:
 - Generating “virtual meteors” with different properties: velocity, brightness, flight direction distribution, ...
 - Develop “somehow” a “virtual sky” with the meteors
→ Observation with a CILBO camera or similar system
 - Compare detected distribution with the simulated distribution

/1/ <http://www.rssd.esa.int/index.php?project=METEOR&page=Index>

/2/ <http://www.rssd.esa.int/index.php?project=METEOR&page=cidstamp>