

# Reduction of MIDI data (a starter)

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Courtesy of Tyler Nordgren

# What it is not and other disclaimers

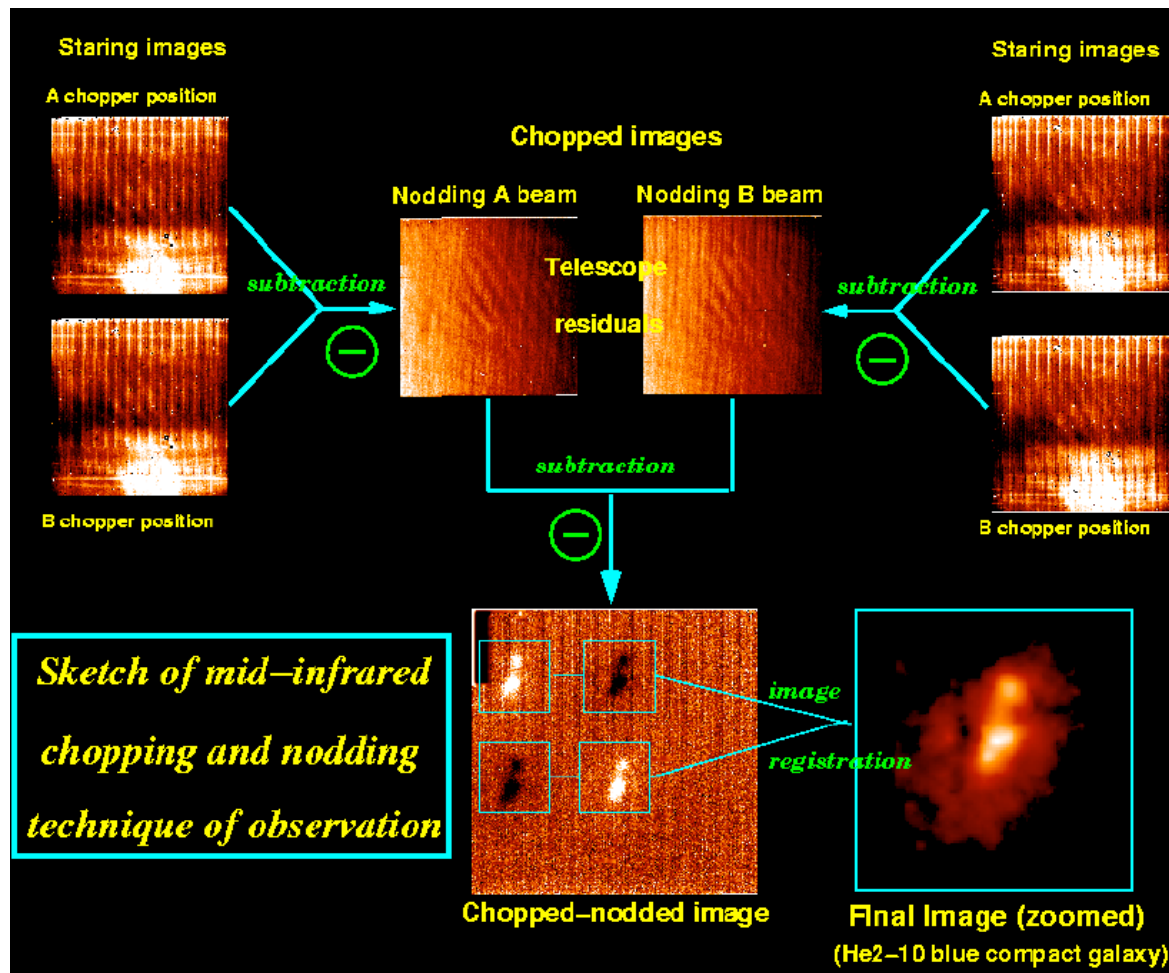
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- Not a tutorial
- Just to get you started
- Not comprehensive
- Some tips not found anywhere else
- To include as many references as possible

# Resources!

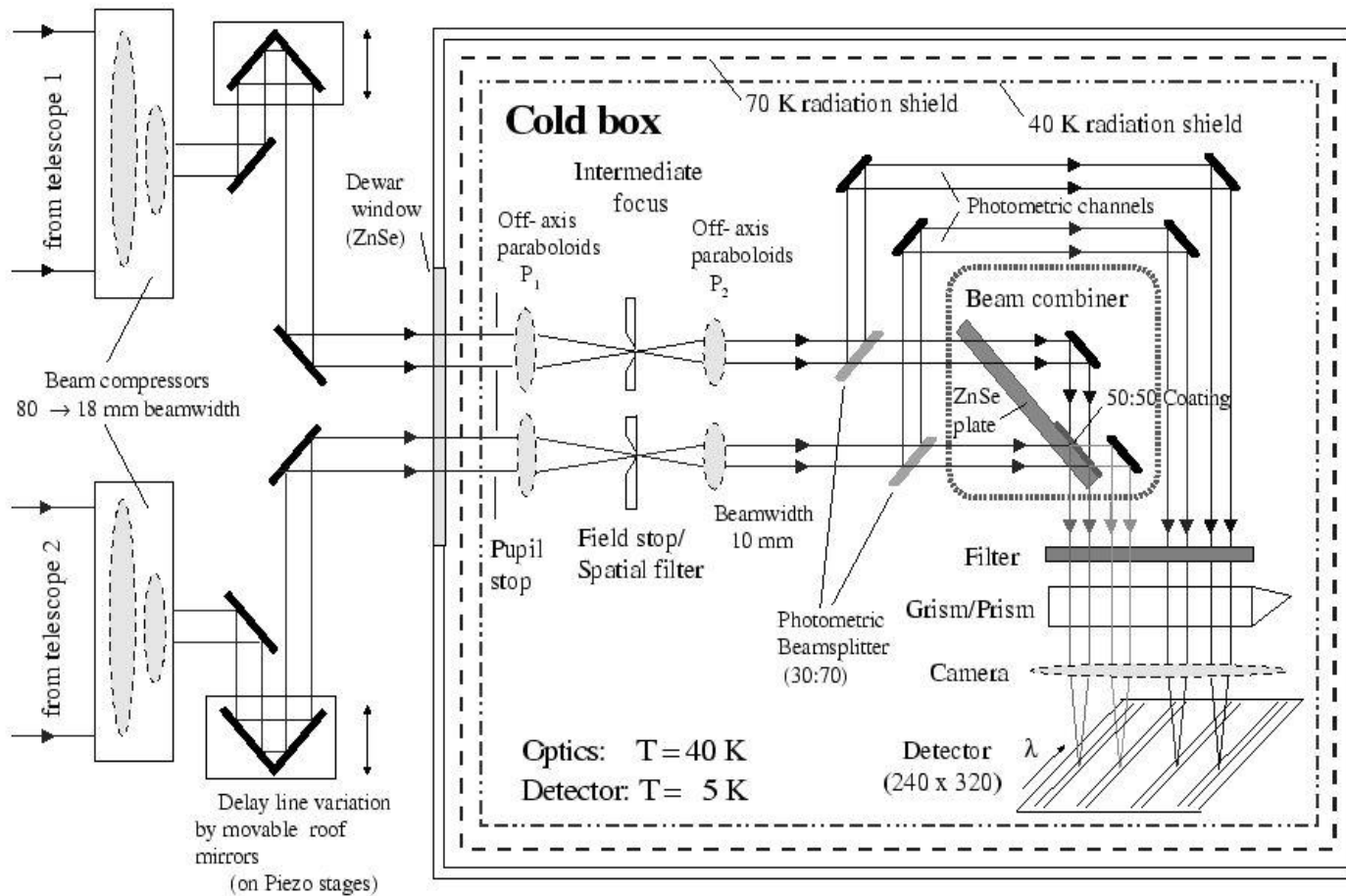
- MIA+EWS: <http://www.strw.leidenuniv.nl/~nevec/MIDI/index.html>
  - Download the most widely used data reduction software
- Paranal MIDI pages and data reduction cookbook:  
<http://www.eso.org/sci/facilities/paranal/instruments/midi/doc/index.html>
  - The official ESO support pages, including a cookbook for starters
- Porquerolles School 2010:  
<http://ipag.osug.fr/twiki/bin/view/Jmmc/VltiSchool2010/SchoolPresentations>
  - Excellent MIDI data reduction talks
- MIDI data reduction pages at ESO (including MyMidiGui tools):  
<http://www.eso.org/~chummel/midi/midi.html>
  - Christian Hummel's IDL front-end for MIA\_EWS tools and other data reduction news
- Science Data Products Forum (hosted by ESO):  
<https://www.eso.org/scienceforum/forums/list.page>
  - Post questions to the community and find answers. ESO is just the moderator.

# Observing in the mid-infrared

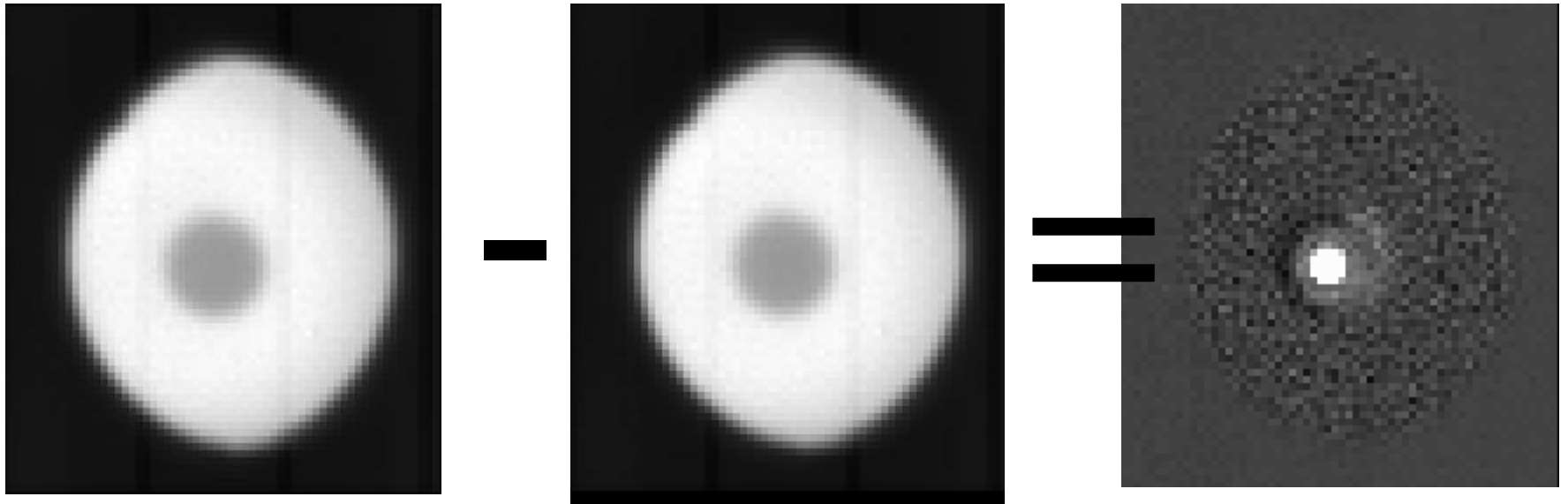


# MIDI schematic drawing

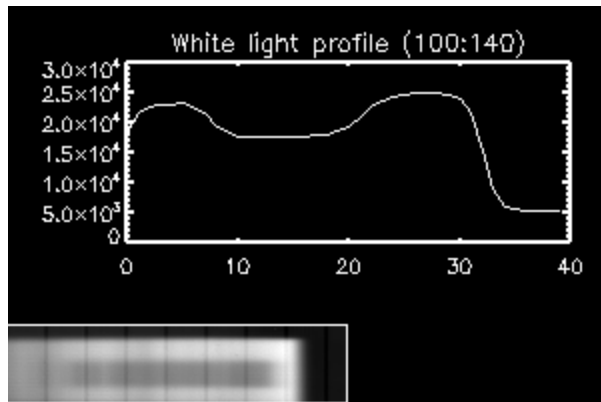
Principle of MIDI - the MID- infrared Interferometer for the VLTI



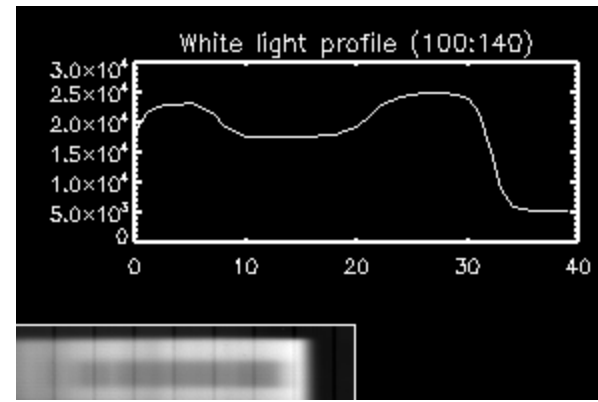
# Acquisition



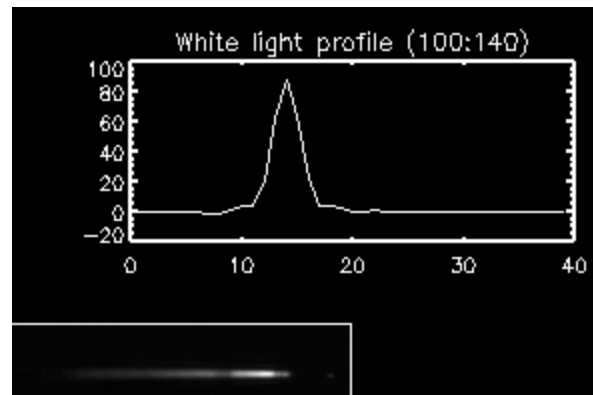
# Photometry



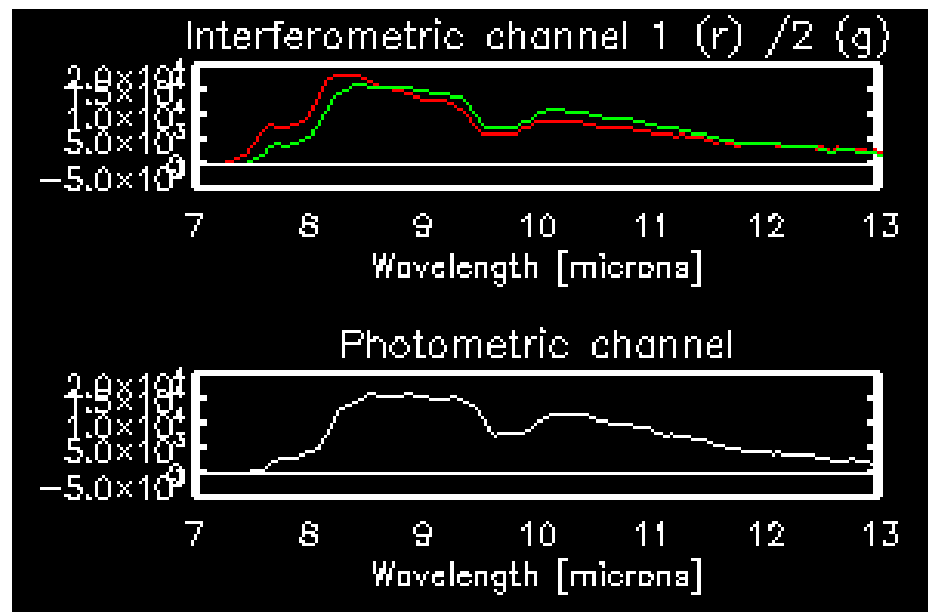
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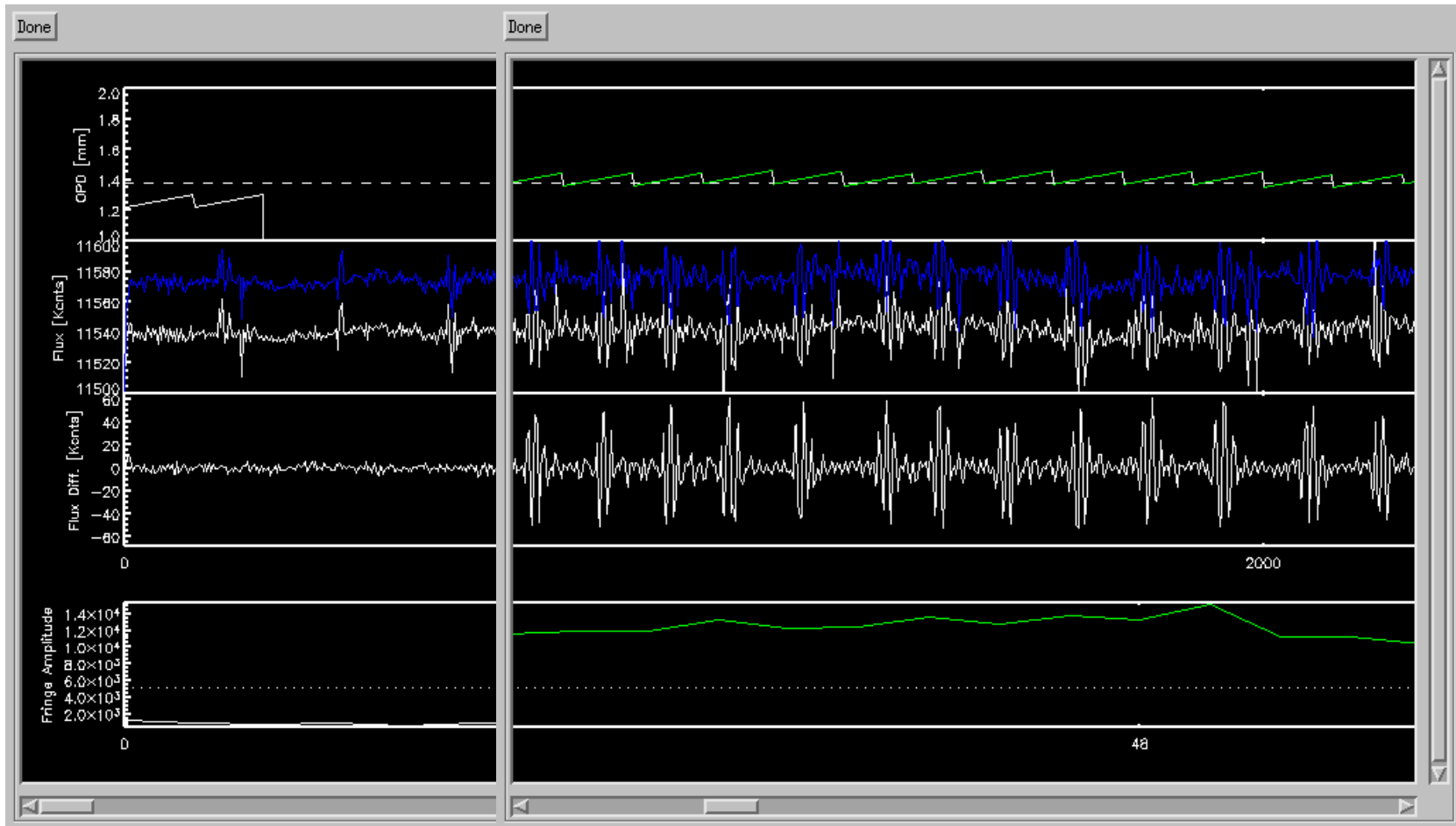
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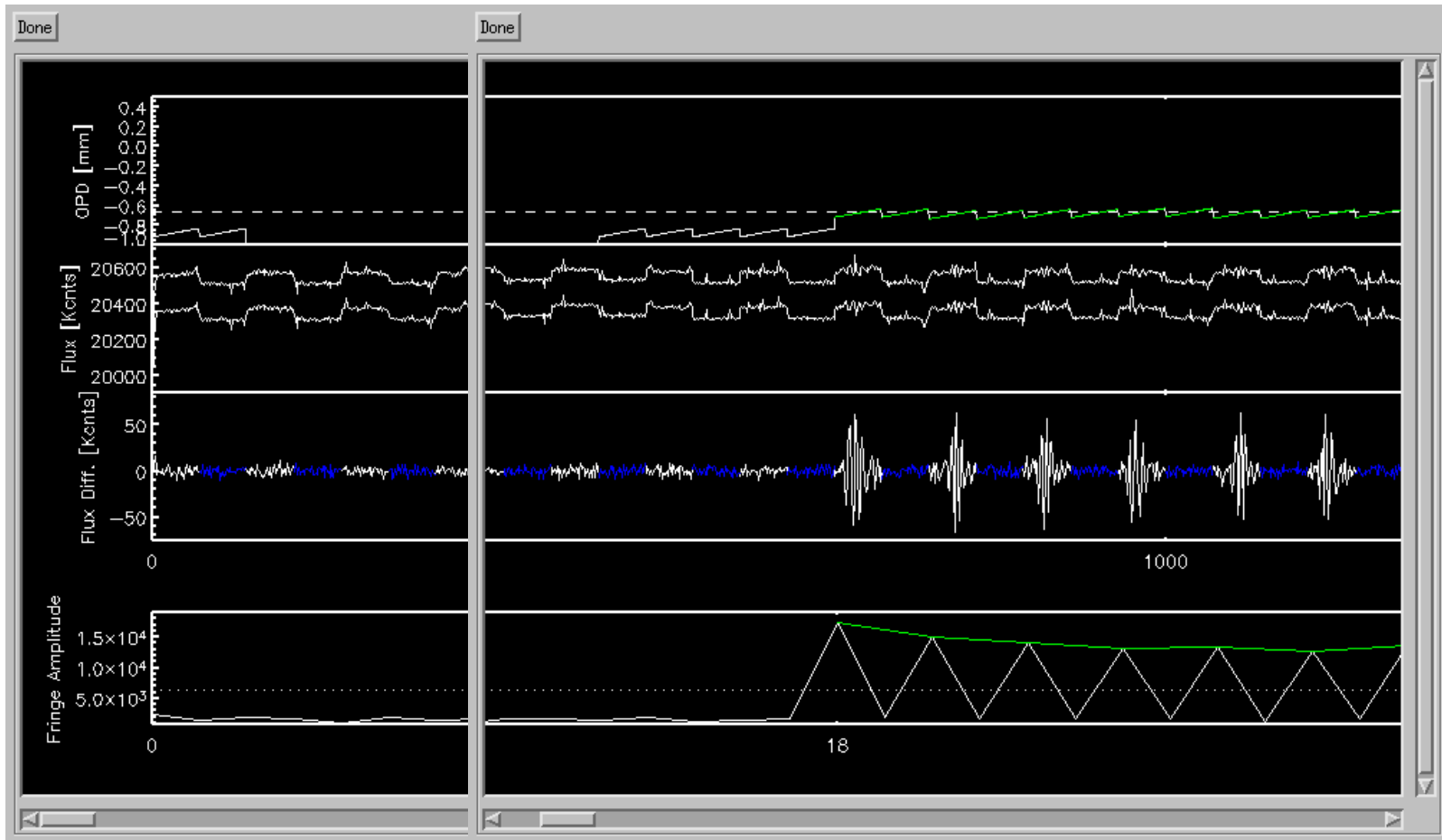
# Spectrum extraction



# HIGH\_SENS (high sensitivity)

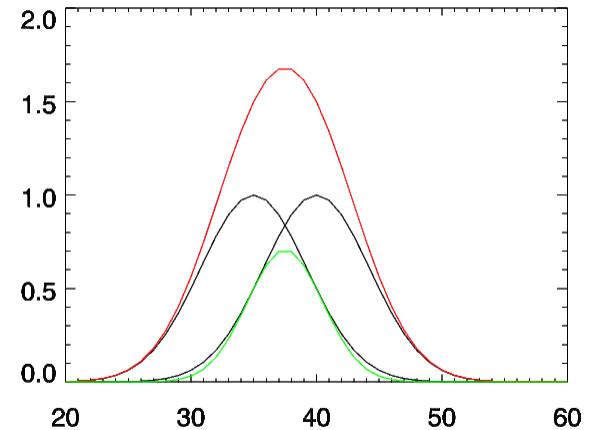


# SCI\_PHOT



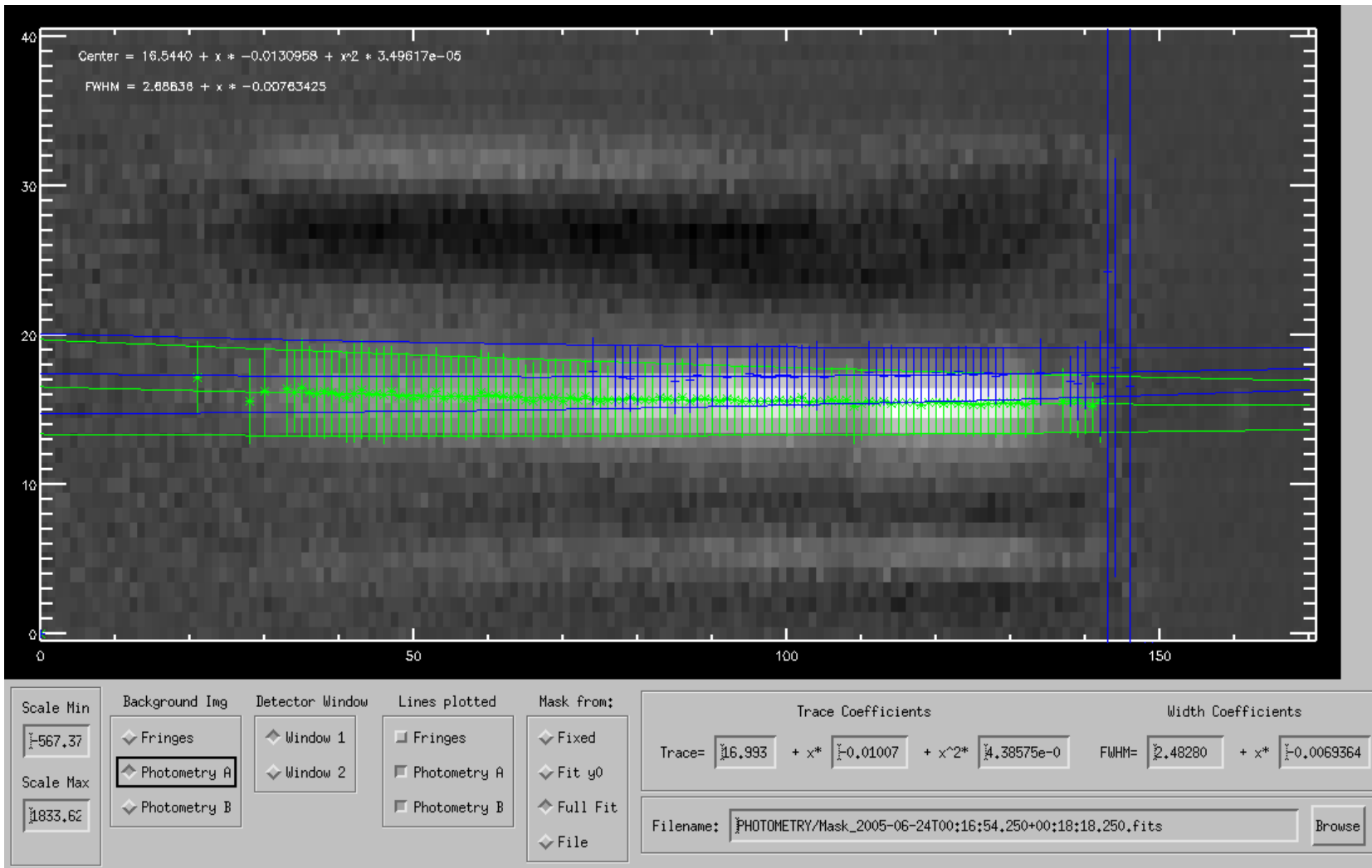
# Multiply, then mask...

$$\sqrt{I_{A,1}I_{B,1}} + \sqrt{I_{A,2}I_{B,2}}$$



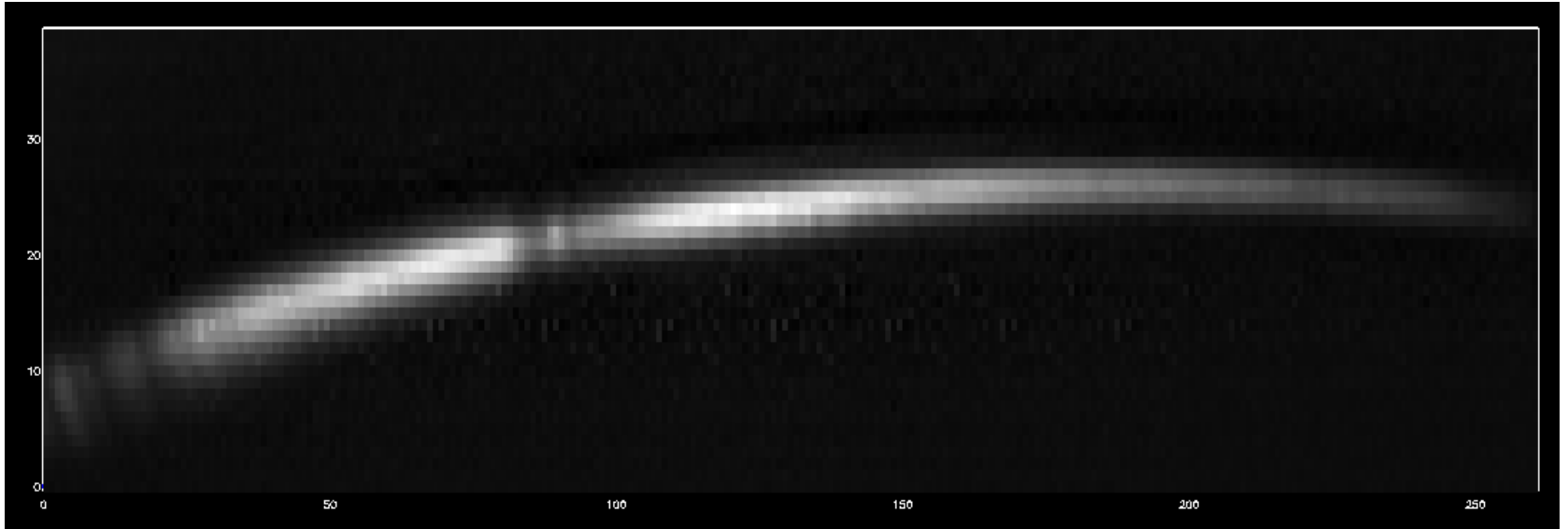
- Only the green overlap area contributes to the correlated flux
- Therefore, multiply detector pixels first, then use common mask (red) to extract

# Beam overlap problems

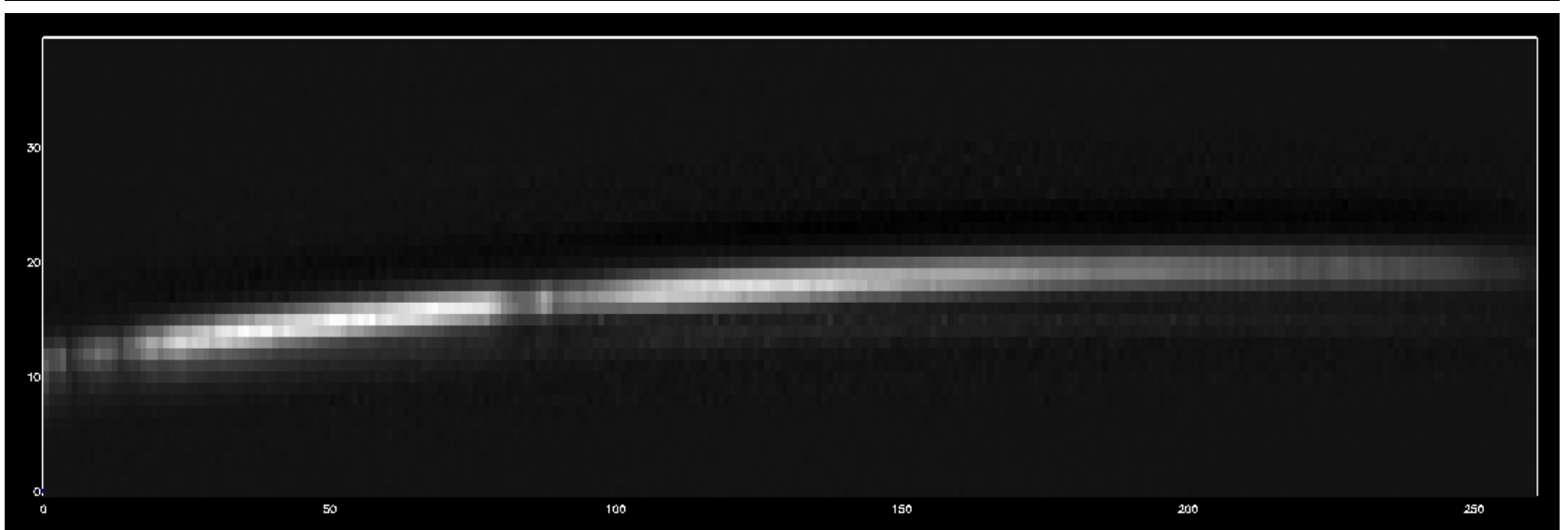


# Optical distortion

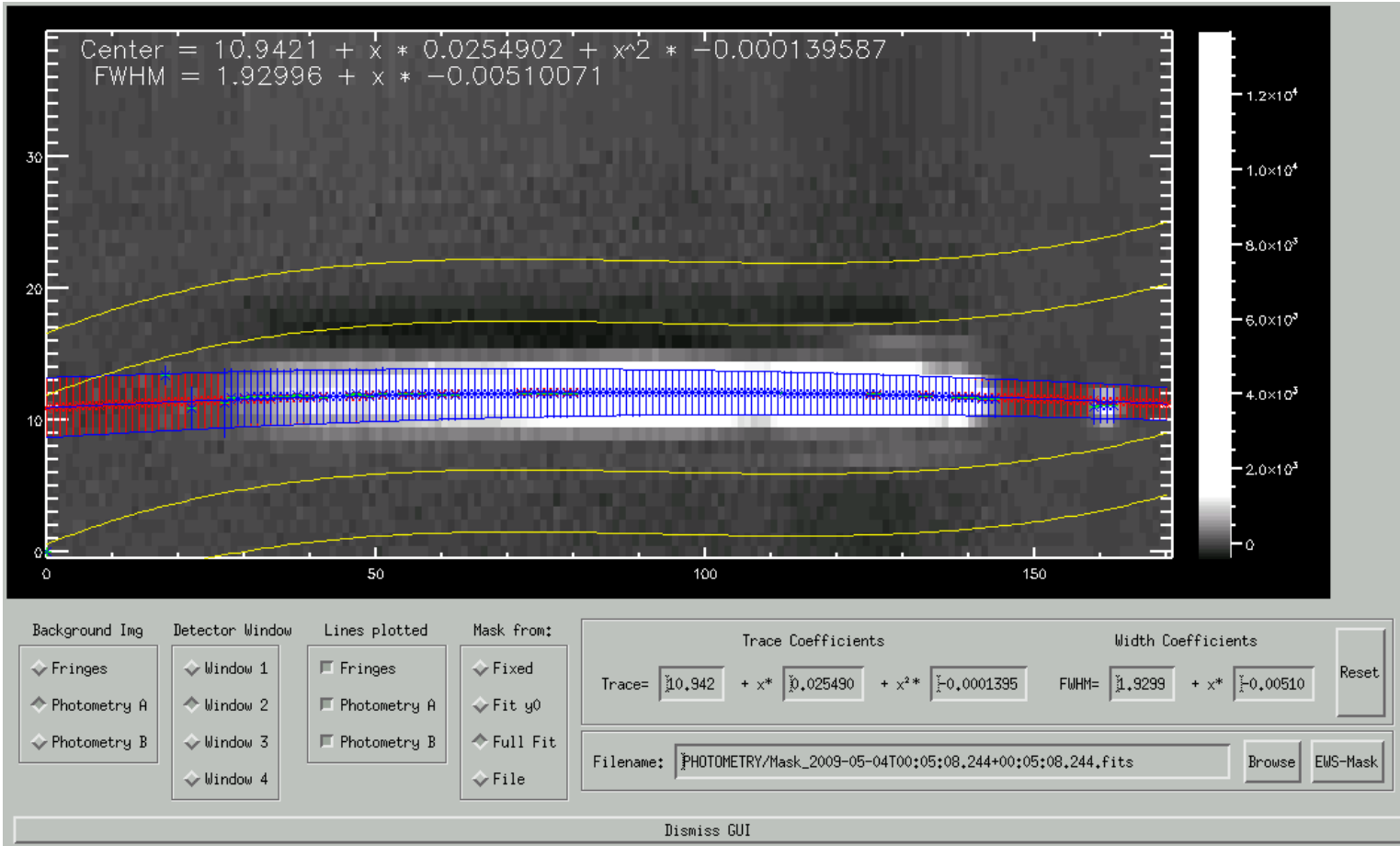
$P_B$



$I_1$



# Sky windows



# Service-mode calibrator reductions

## MIDI calibrators

- [HDN001014](#)
- [HDN001038](#)
- [HDN004128](#)
- [HDN009053](#)
- [HDN011961](#)
- [HDN012929](#)
- [HDN018884](#)
- [HDN020720](#)
- [HDN031398](#)
- [HDN033684](#)
- [HDN036079](#)
- [HDN036389](#)
- [HDN042995](#)
- [HDN048915](#)
- [HDN050778](#)
- [HDN061421](#)
- [HDN065183](#)
- [HDN068623](#)
- [HDN071250](#)
- [HDN081797](#)
- [HDN082668](#)
- [HDN092036](#)
- [HDN093070](#)
- [HDN094336](#)
- [HDN095272](#)
- [HDN097451](#)
- [HDN098292](#)
- [HDN101104](#)
- [HDN101666](#)
- [HDN102461](#)
- [HDN102839](#)
- [HDN107446](#)
- [HDN111915](#)
- [HDN112213](#)
- [HDN119193](#)
- [HDN120323](#)
- [HDN123123](#)
- [HDN123139](#)
- [HDN133216](#)
- [HDN136422](#)
- [HDN142198](#)

## MIDI observation dates

- [2006-02-27 AD0-AG0](#)
- [2006-11-13 AH0-AD0](#)
- [2007-03-14 AK0-AG0](#)
- [2007-07-02 AE0-AH0](#)
- [2007-10-03 AE0-AG0](#)
- [2007-10-03 AH0-AG0](#)
- [2008-04-21 UT1-UT3](#)
- [2008-04-24 UT2-UT4](#)
- [2008-05-19 UT1-UT3](#)
- [2008-06-06 AE0-AG0](#)
- [2008-06-06 AE0-AH0](#)
- [2008-06-06 AH0-AG0](#)
- [2008-06-22 UT2-UT3](#)
- [2008-07-01 AE0-AG0](#)
- [2008-07-02 AE0-AG0](#)
- [2008-07-03 AE0-AG0](#)
- [2008-07-03 AE0-AH0](#)
- [2008-07-03 AH0-AG0](#)
- [2008-09-27 AG1-AD0](#)
- [2008-10-01 AE0-AG0](#)
- [2008-11-30 AH0-AD0](#)
- [2008-12-25 AA0-AG1](#)
- [2009-01-16 AG1-AD0](#)
- [2009-01-16 AG1-AH0](#)
- [2009-01-16 AH0-AD0](#)
- [2009-01-21 AH0-AG0](#)
- [2009-02-26 AA0-AG1](#)
- [2009-03-17 AG1-AD0](#)
- [2009-03-17 AH0-AD0](#)
- [2009-04-19 AH0-AG0](#)
- [2009-05-02 AH0-AD0](#)
- [2009-05-03 AG1-AD0](#)
- [2009-05-04 AG1-AH0](#)
- [2009-05-08 UT3-UT4](#)
- [2009-06-30 AK0-AA0](#)
- [2009-07-02 AK0-AG1](#)
- [2009-07-05 AE0-AG0](#)
- [2009-07-06 AE0-AH0](#)
- [2009-07-07 AH0-AG0](#)
- [2009-09-27 AD0-AK0](#)
- [2009-09-27 AG1-AD0](#)

## HDN004128

