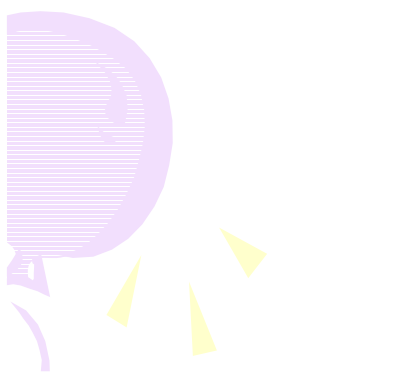




Current situation and future of cooperative San Juan SLR station between Chinese-Argentinean



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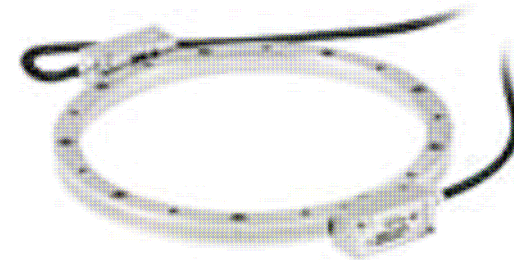


Progress of Upgrading works

- **September 2009 , start upgrading work of KHz and daylight tracking**
 - **Completed the scheme design in early 2010**
 - **Signed the Development Agreement of Laser with the GK Company , June 2010**
 - **Upgrades of control and operating system cooperated with Changchun Observatory 2011**
 - **System integration and testing cooperated with Changchun and Beijing station**
 - **Finished the design of photoelectric conversion receiver**
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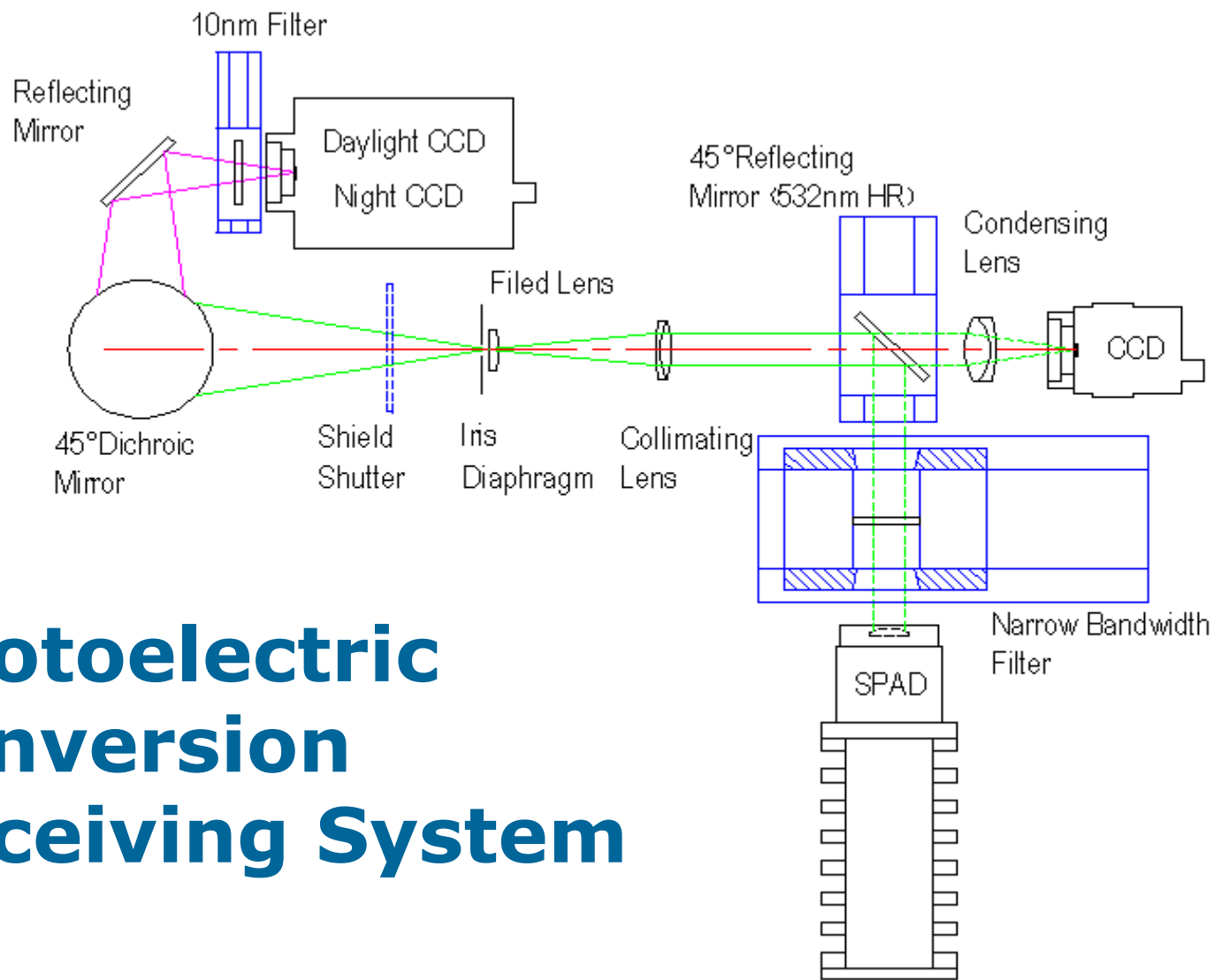
Progress of Upgrading works

- Laser will be used for a 3-month trial observation in Changchun station this year
- Optical angle encoder instead of AZ-EL inductor
- After completion of the preparation, the equipments will be delivered to San Juan station, and to complete the upgrades in the San Juan
- Realize routine observation of KHz and daylight tracing in 2012



Dual Readheads angle encoder

Photoelectric Conversion Receiving System



Key equipment: Laser

Specification:

- Wavelength: 532 nm
- Frequency: 500Hz-1KHz
- Pulse energy: 2.5 mJ at 1kHz
- Pulse to pulse instability 2% RMS (8 hours)
- Pulse width: <15 PS
- Divergency: 1 mrad
- Diameter of beam: 2 mm
- Polarization : Horizontal
- Beam Point Instability <50 urad
- Operating Temperature 15-30°C



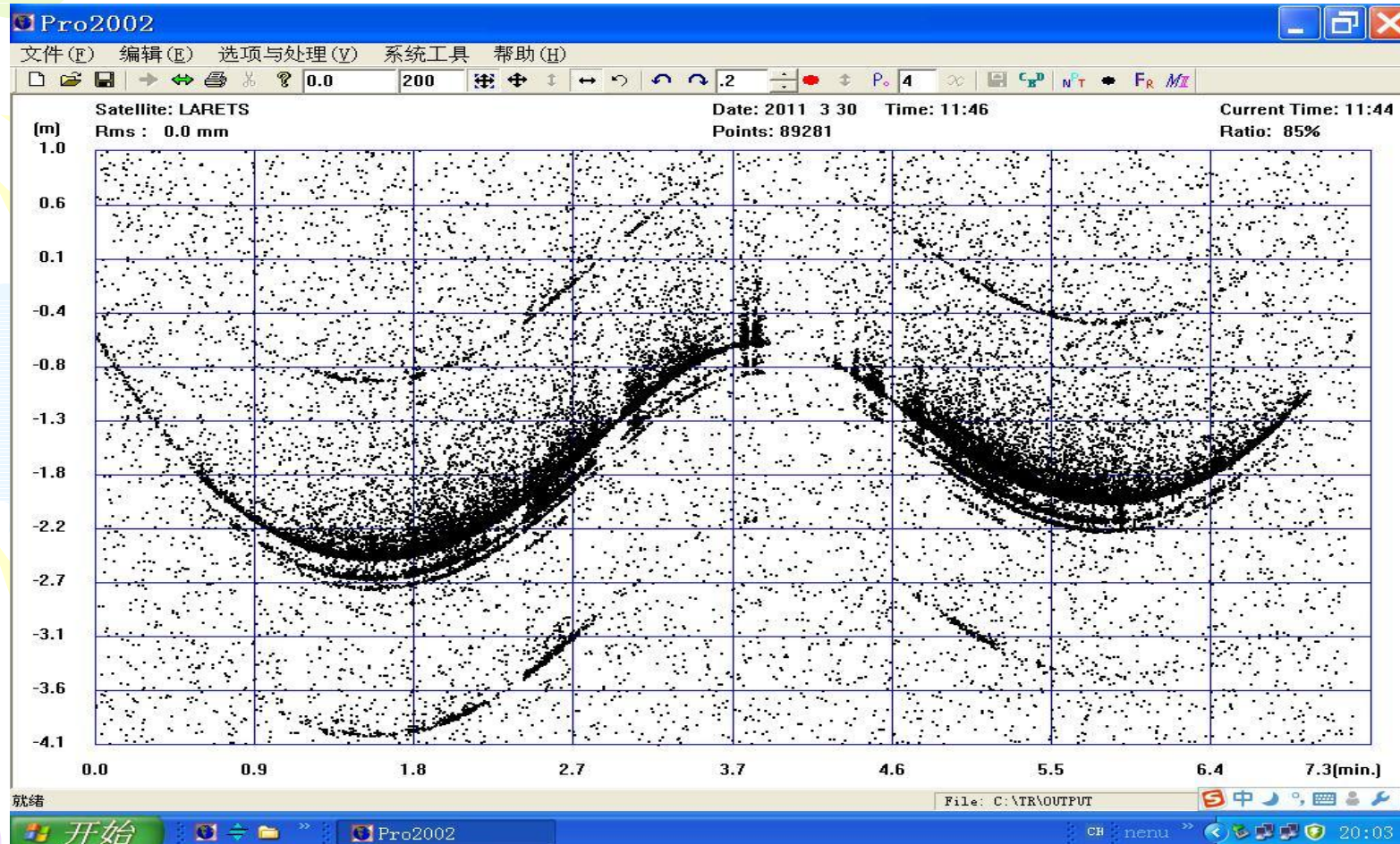
Special requirements on the laser

- Maintainability:
 - Set up multiple test points
 - Easy replacement of devices.
- Maintenance Training
- Stability
- Ranging accuracy



Laser Testing in Changchun Station

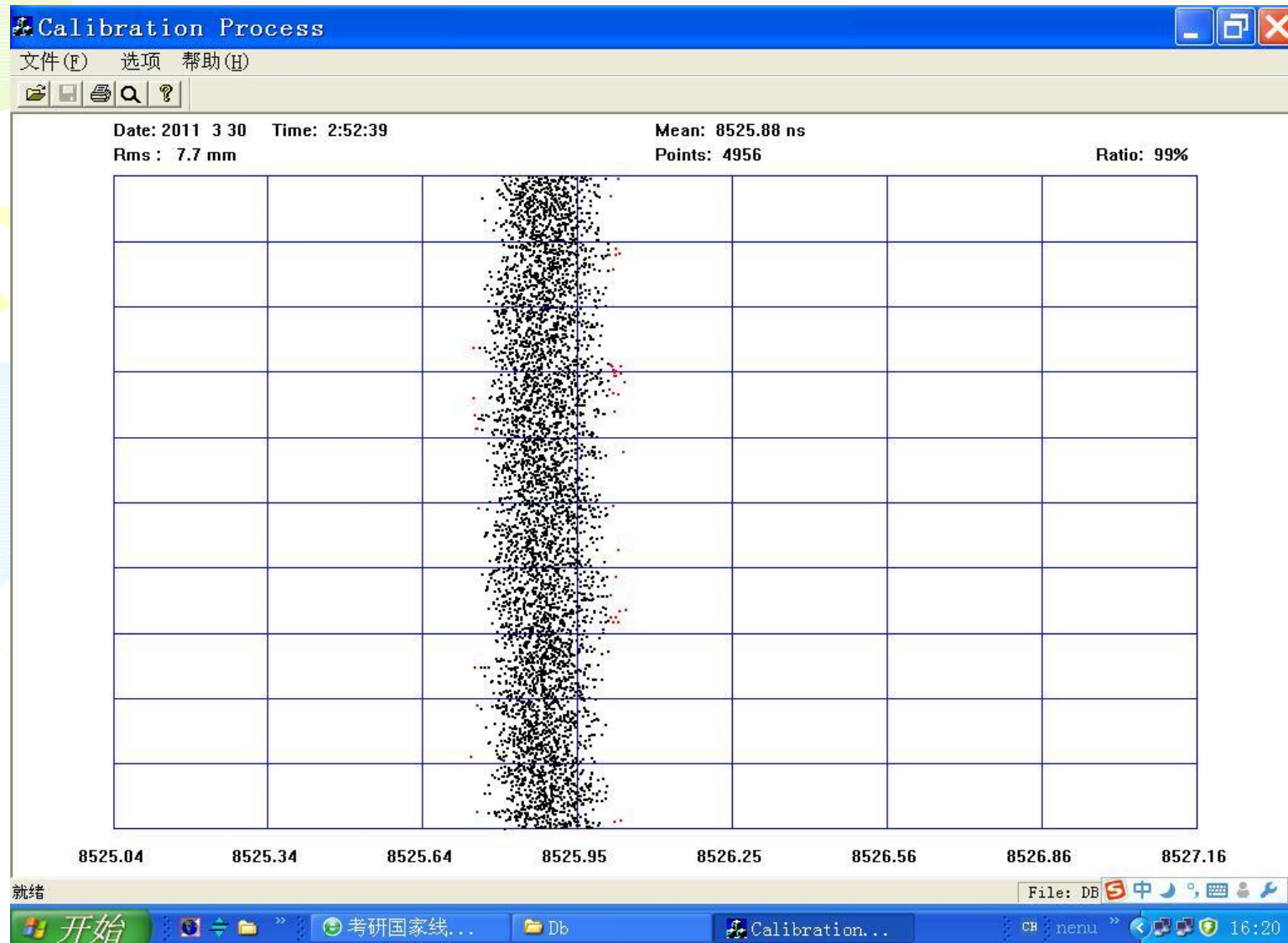
Laser Testing (first time, at Changchun Station)



March 30, Observed LARETS satellite rms:25.8mm

- Serious multi-pulse phenomena

Target test rms : 7.7mm

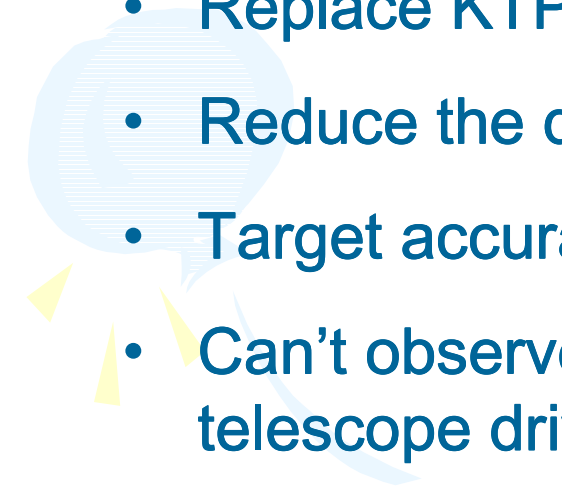
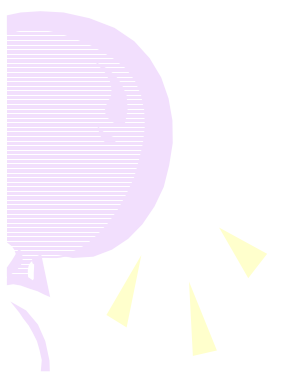


Target: corner cube

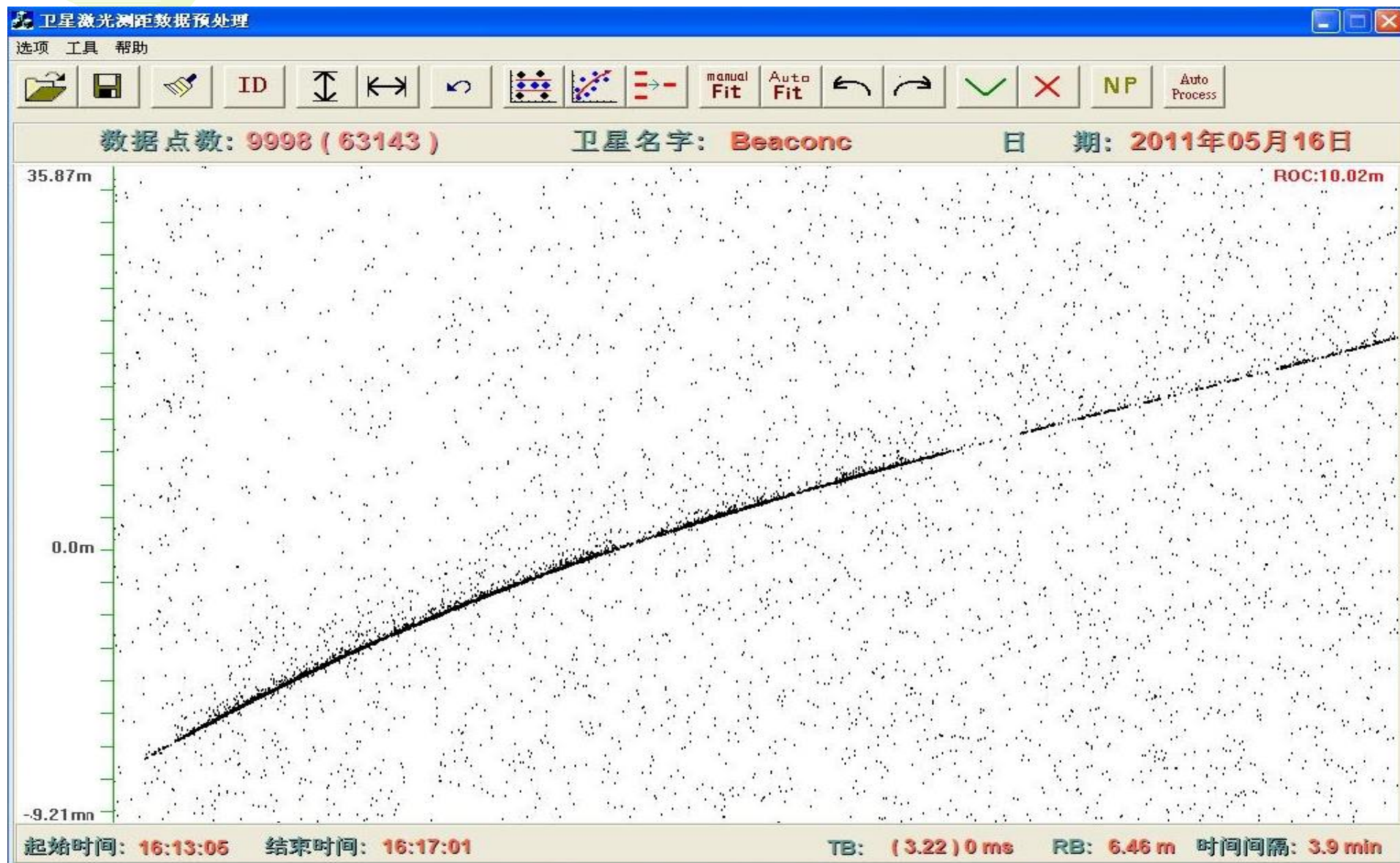


Laser Testing (second time, at Beijing Station)

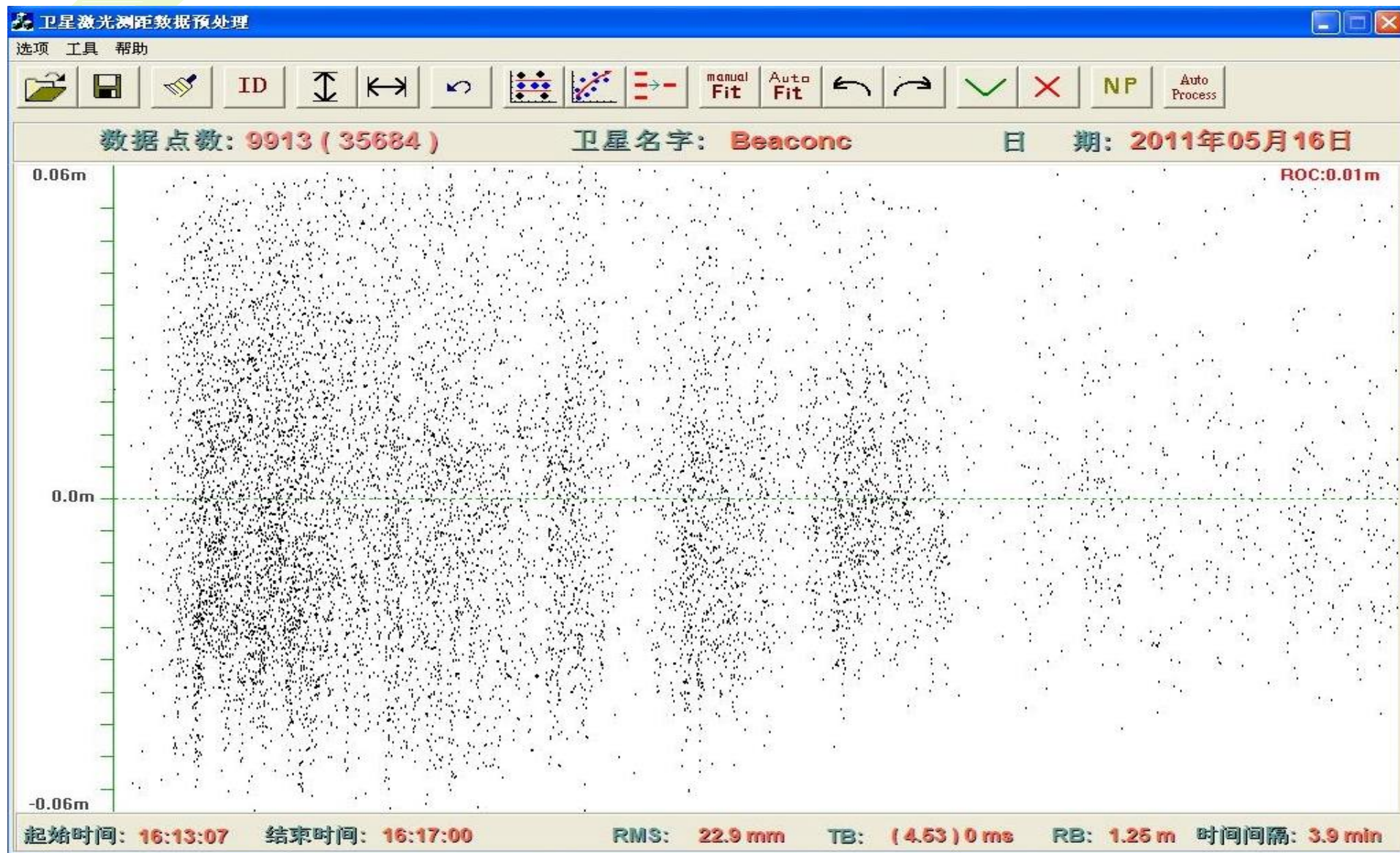
Improvement:

- Adjust electro-optic switch to filter multi-pulse
 - Replace KTP with LBO (frequency doubling crystal)
 - Reduce the divergence angle: 0.5mrad
 - Target accuracy rms: 5-6 mm (diffuse surface target)
 - Can't observe the satellites due to the failure of the telescope driving at the beginning
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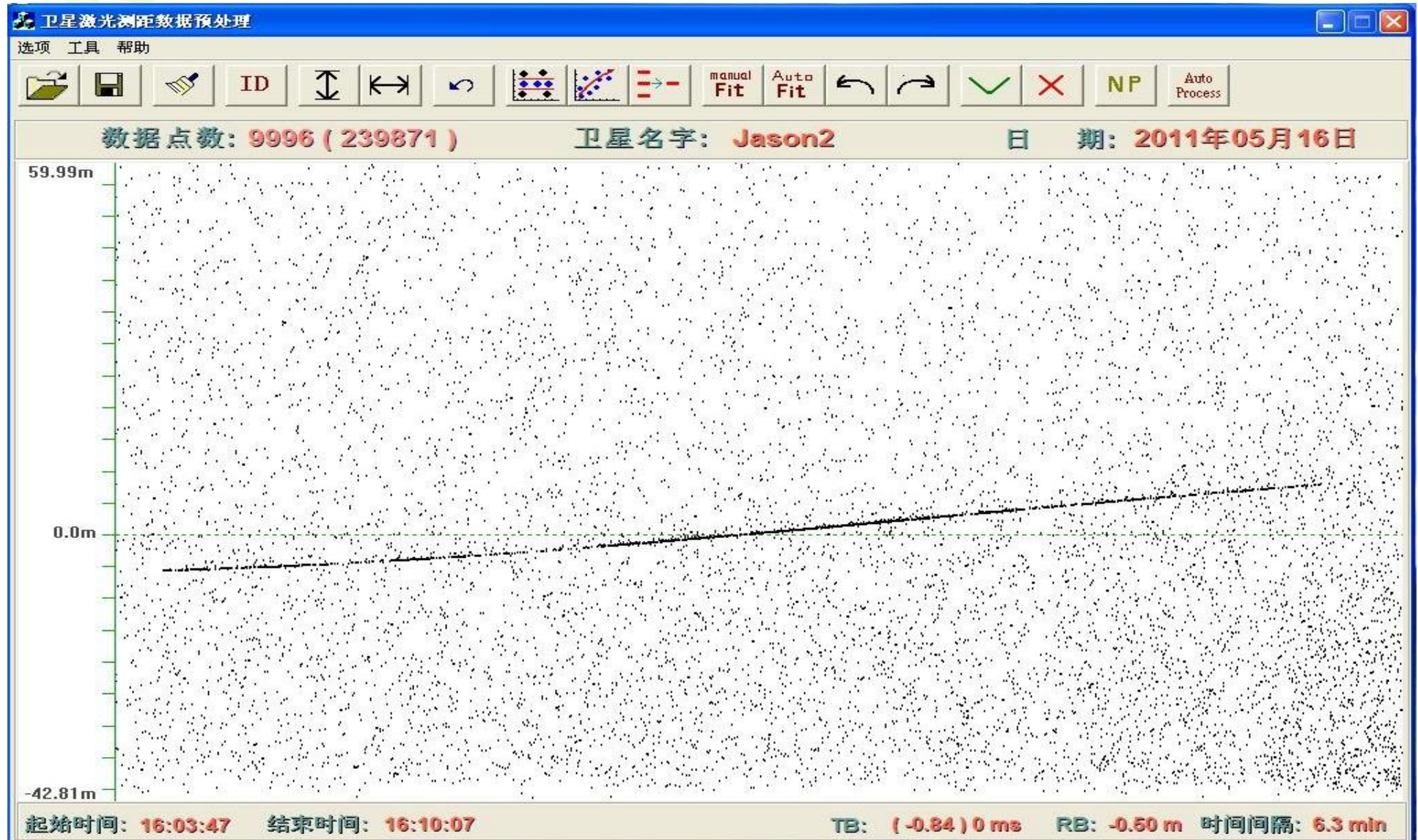
KHz tracking for Beaconc



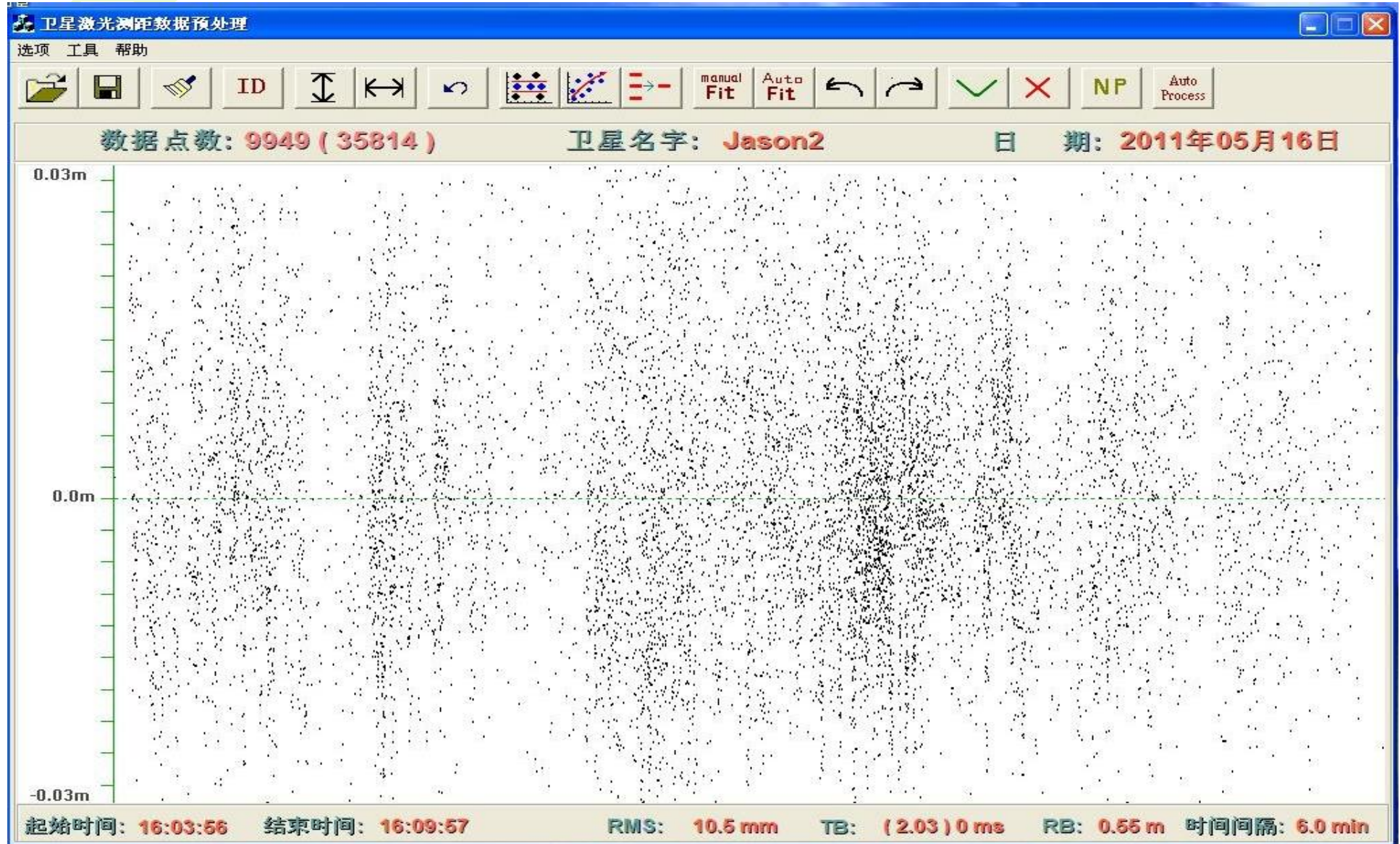
KHz tracking for Beaconc Result



KHz tracking for Jason-2

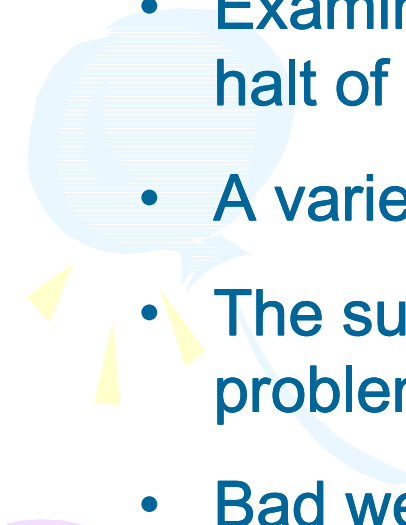



KHz tracking for Jason-2 result





Observation status in 2009-2010

- Observations keep the good status in 2009
 - Sun Juan Station met some problems in 2010
 - Examine and maintenance of the power supply led to a halt of observation approximately 35 days
 - A variety of equipment failure began to appear
 - The supply of dichloroethane happened serious problem
 - Bad weather
 - These causes significantly reduced the number of days of observation
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Future Development of San Juan Station

This year, Implementation of the 40-meter radio telescope project (VLBI) in San Juan

We hope that the station will have a GPS and VLBI collocated with the SLR system in 2015

THANKS

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