

Inter–Agency Space Debris Coordination Committee



State Space Agency of Ukraine



CPOSD – NEW SOFTWARE FOR OPTICAL OBSERVATIONS PROCESSING

IADC42

16-19/04/2024



MAIN FEATURES

CPOSD - Centralized Processing of Optical Sensors Data

CPOSD IS:

One of the best software for automatic multithreaded data processing of astrometric and photometric optical observations.

Implemented as a service and independent standalone/local/built-in/corporate software.

High level of data processing automation due to the many years of formalized experience of astronomy professionals and amateurs, customers and developers.

Relieves the observer's stress by removing the operations such as manual frames comparing for objects detection, and much more.

CPOSD CAN:

Organize automatic detection of moving objects and light curves on frames from many telescopes of the observatory!

Help create a moving object detection service for processing frames of amateur astronomers!

Automate your observational astronomy tasks!

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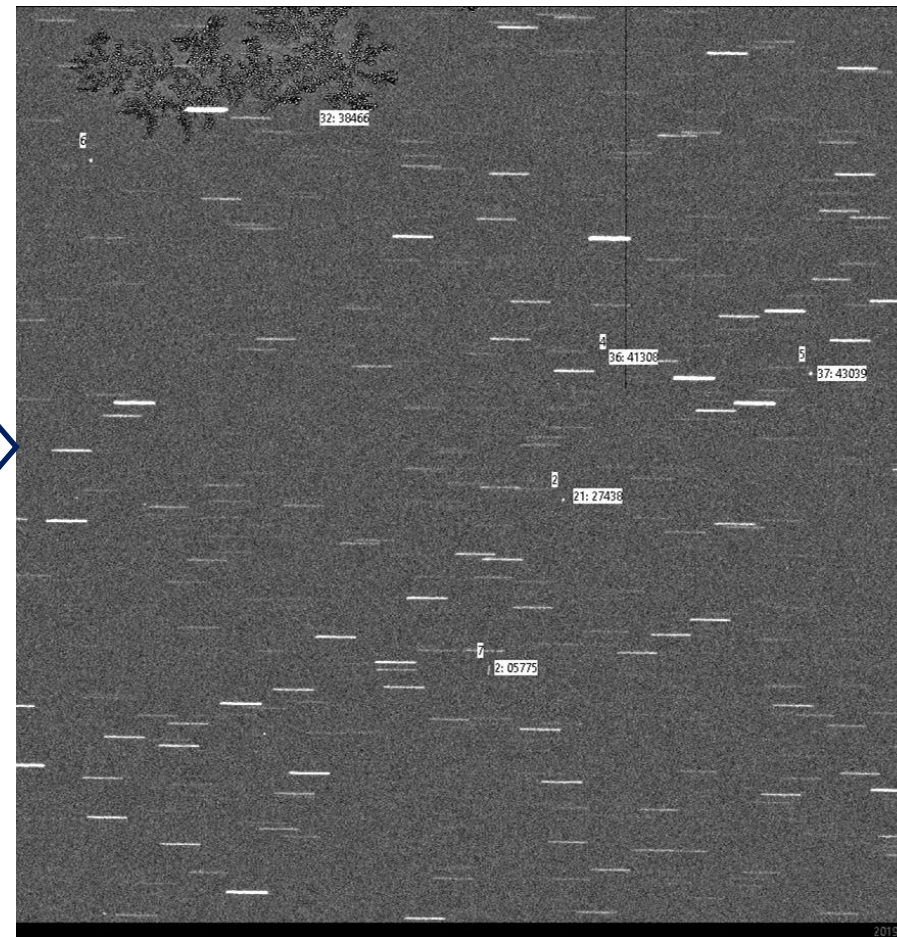
16-19/04/2024

MAIN FEATURES

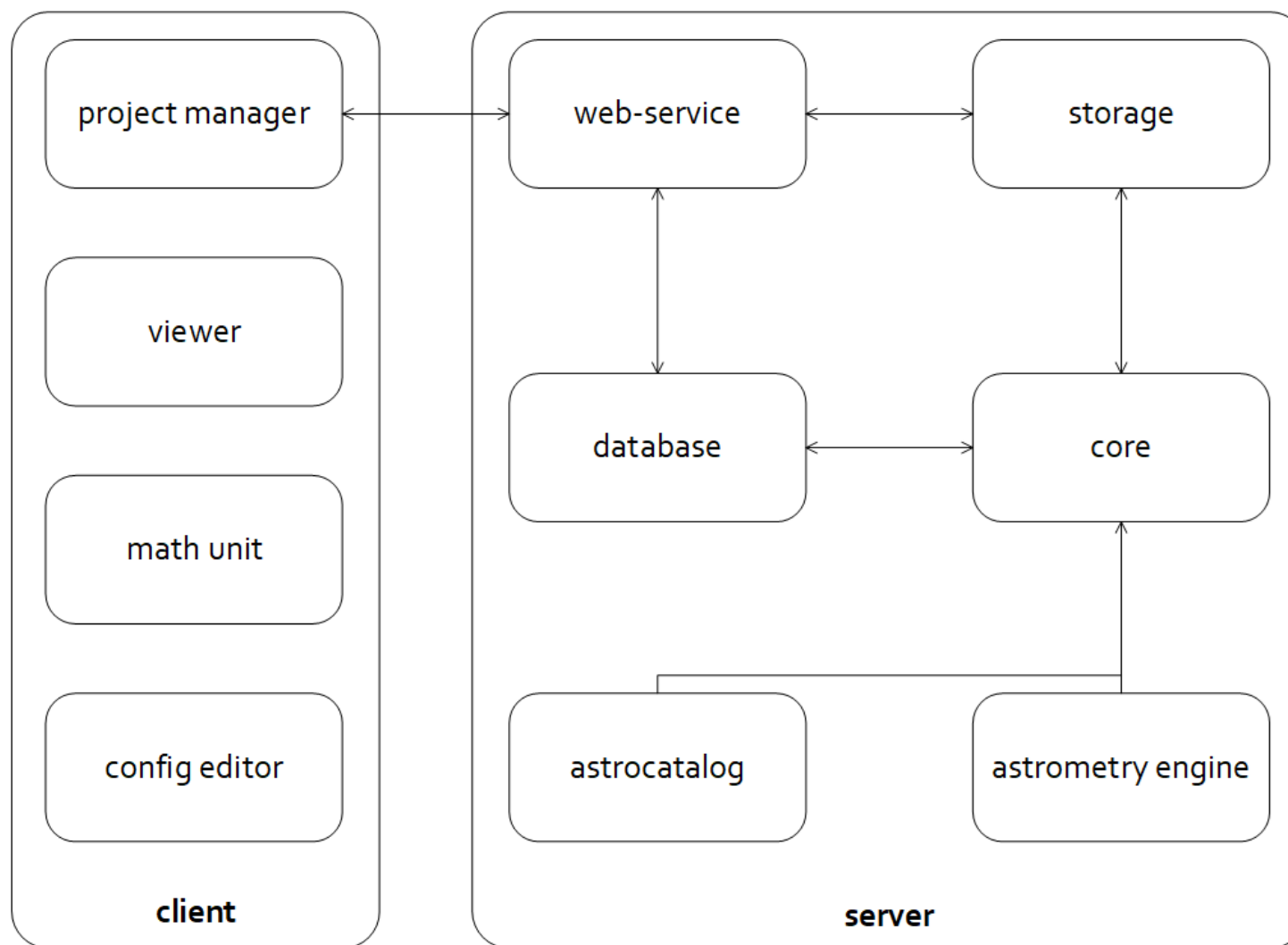
Raw frames



Satellites detected



CPOSD ARCHITECTURE



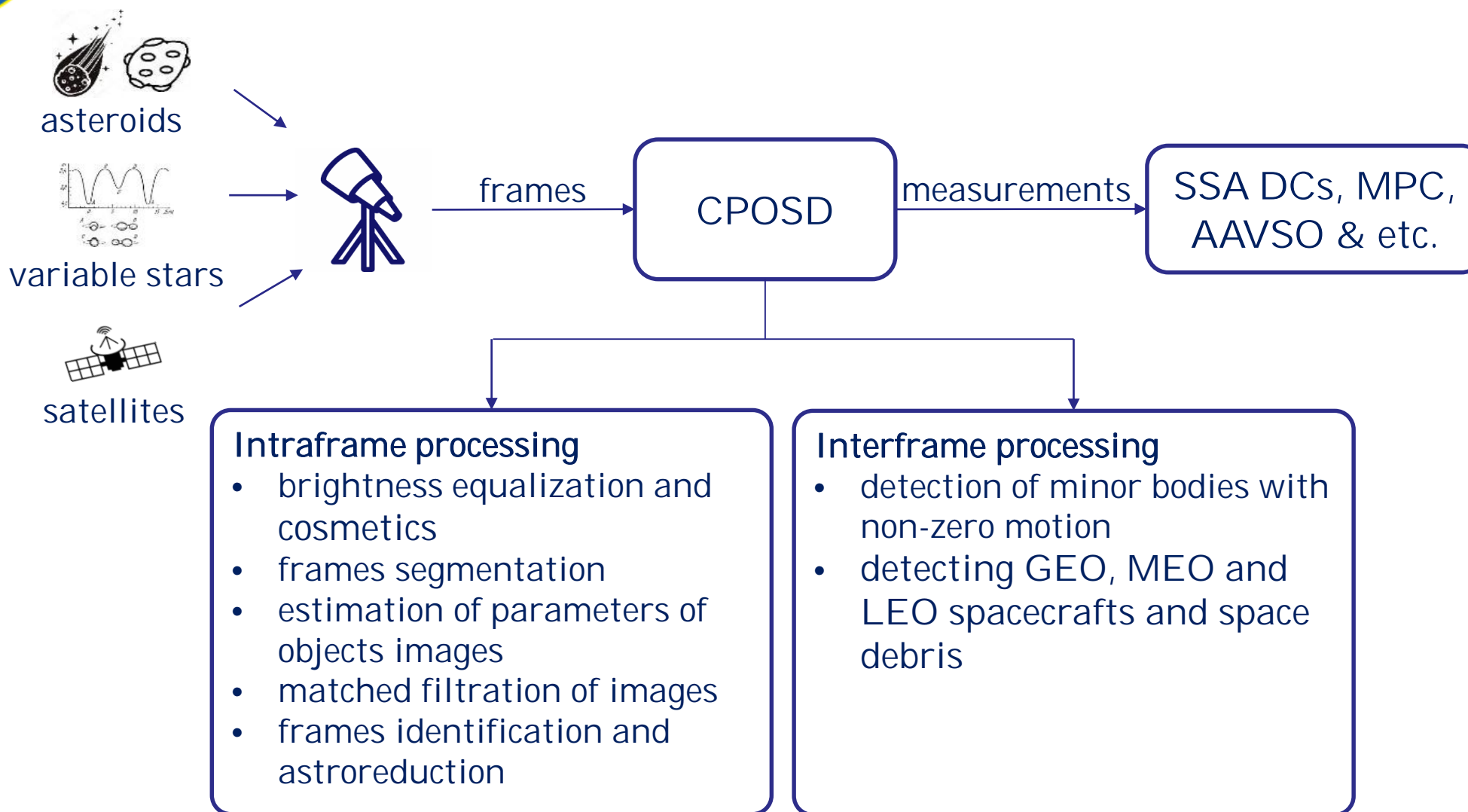
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CPOSD ARCHITECTURE





VIEW OF THE CLIENT PART DURING PROCESSING

Dashboard

Project 3

1

ID 3, "PROJECT 2023.11.30 11:29:55" 2
Download directory "D:\tmp"
20 raw sources

STATUS OPEN

[FRAMES]	Failed	Success	Progress	Idle Time 3
Search	0	5347	---	0:10:20
Registration	0	1656	031.0%	0:00:00
Processing	38	761	014.9%	0:00:00
Downloading	1	189	004.3%	0:00:00

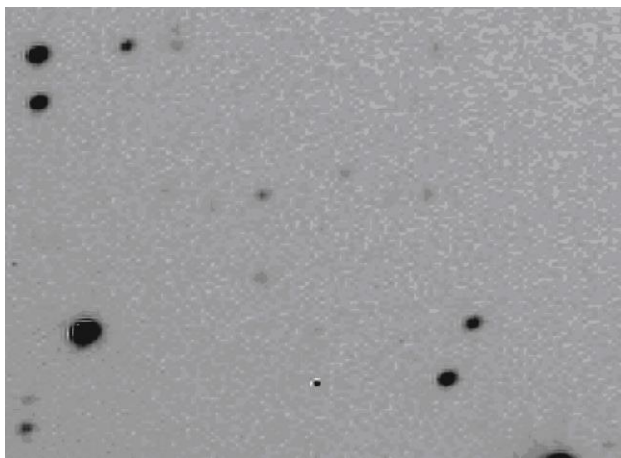
[SERIES] 4	Processing Status 5	Downloading Status 6
ID 2, "Series2" RS "Z:\frames\2023-11-01\28115" DD "D:\tmp\28115\Series2"	SUCCESS, Closed. Search for moving objects is com... 0 exec, 0 fail, 100 succ 0:06:19	SUCCESS 0 fail, 100 succ 0:02:51
ID 3, "Series3" RS "Z:\frames\2023-11-01\28358" DD "D:\tmp\28358\Series3"	SUCCESS, Closed. Search for moving objects is com... 0 exec, 1 fail, 49 succ 0:05:26	EXECUTE, 088.2% 1 fail, 48 succ 0:01:21
ID 4, "Series4" RS "Z:\frames\2023-11-01\33467" DD "D:\tmp\33467\Series4"	SUCCESS, Closed. Search for moving objects is com... 0 exec, 0 fail, 94 succ 0:03:38	EXECUTE, 040.2% 0 fail, 42 succ 0:00:00
ID 5, "Series5" RS "Z:\frames\2023-11-01\35943"	QUEUE, 17 new processed frames were found in serie... 0 exec, 0 fail, 50 succ 0:00:09	
ID 6, "Series6" RS "Z:\frames\2023-11-01\36582"	SUCCESS, Closed. Search for moving objects is com... 0 exec, 0 fail, 30 succ 0:03:10	
ID 7, "Series7" RS "Z:\frames\2023-11-01\36868"	SUCCESS, Closed. Search for moving objects is com... 0 exec, 0 fail, 17 succ 0:01:56	
ID 8, "Series8" RS "Z:\frames\2023-11-01\37948"	EXECUTE, 20 new processed frames were found in se... 0 exec, 0 fail, 50 succ 0:00:09	

192.168.2.70, test@mail.com

connection success

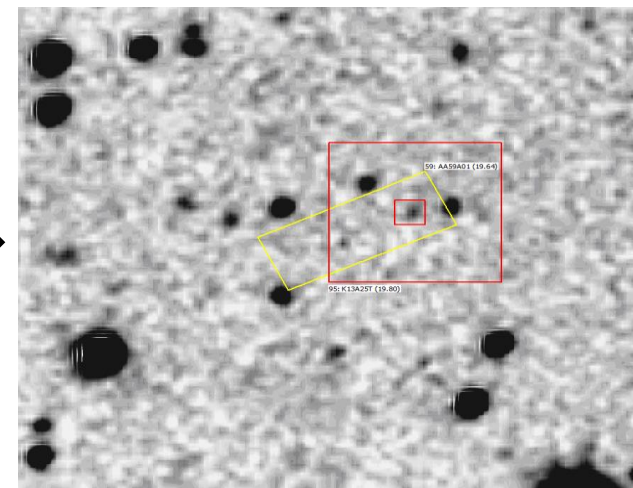


BRIGHTNESS EQUALIZATION OF MULTI FRAMES

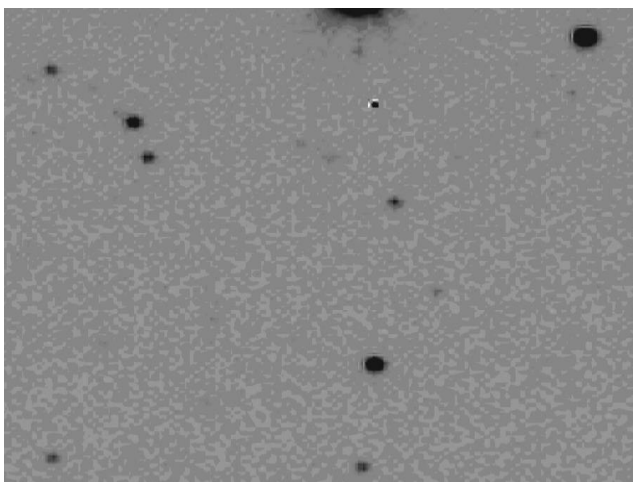


Original image

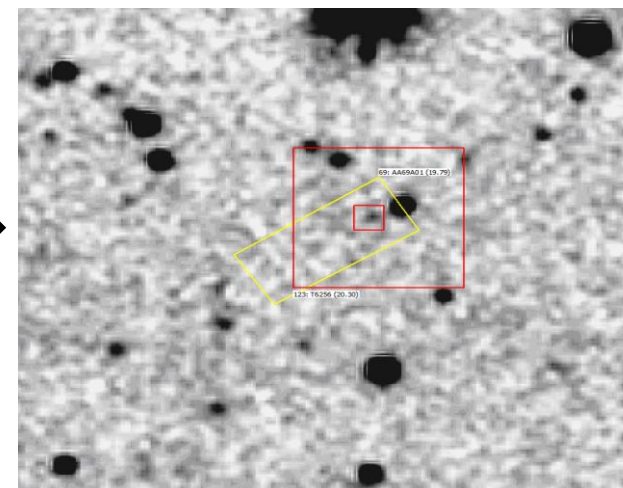
FrameSmooth



Processing result

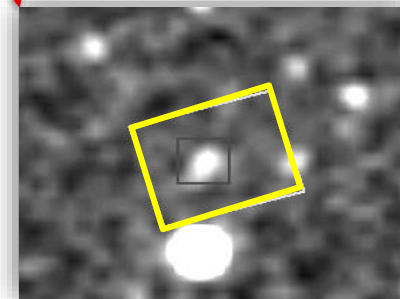
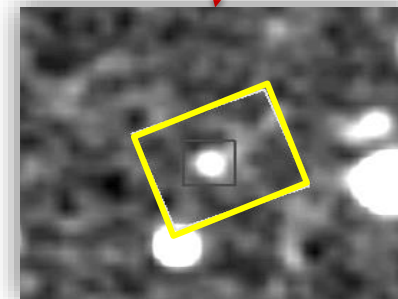
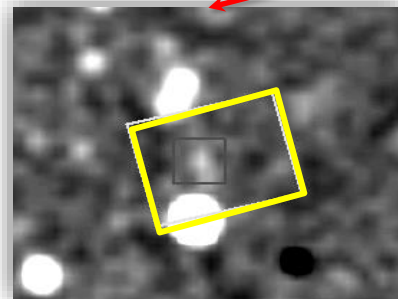
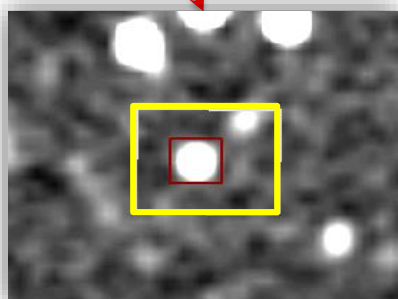
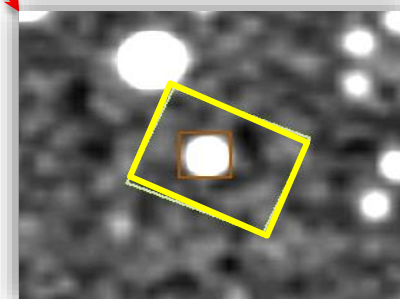
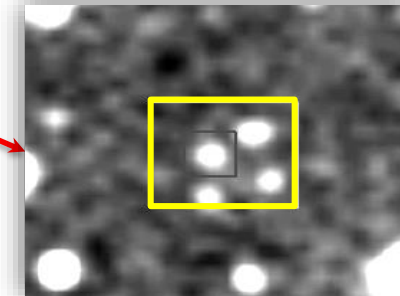
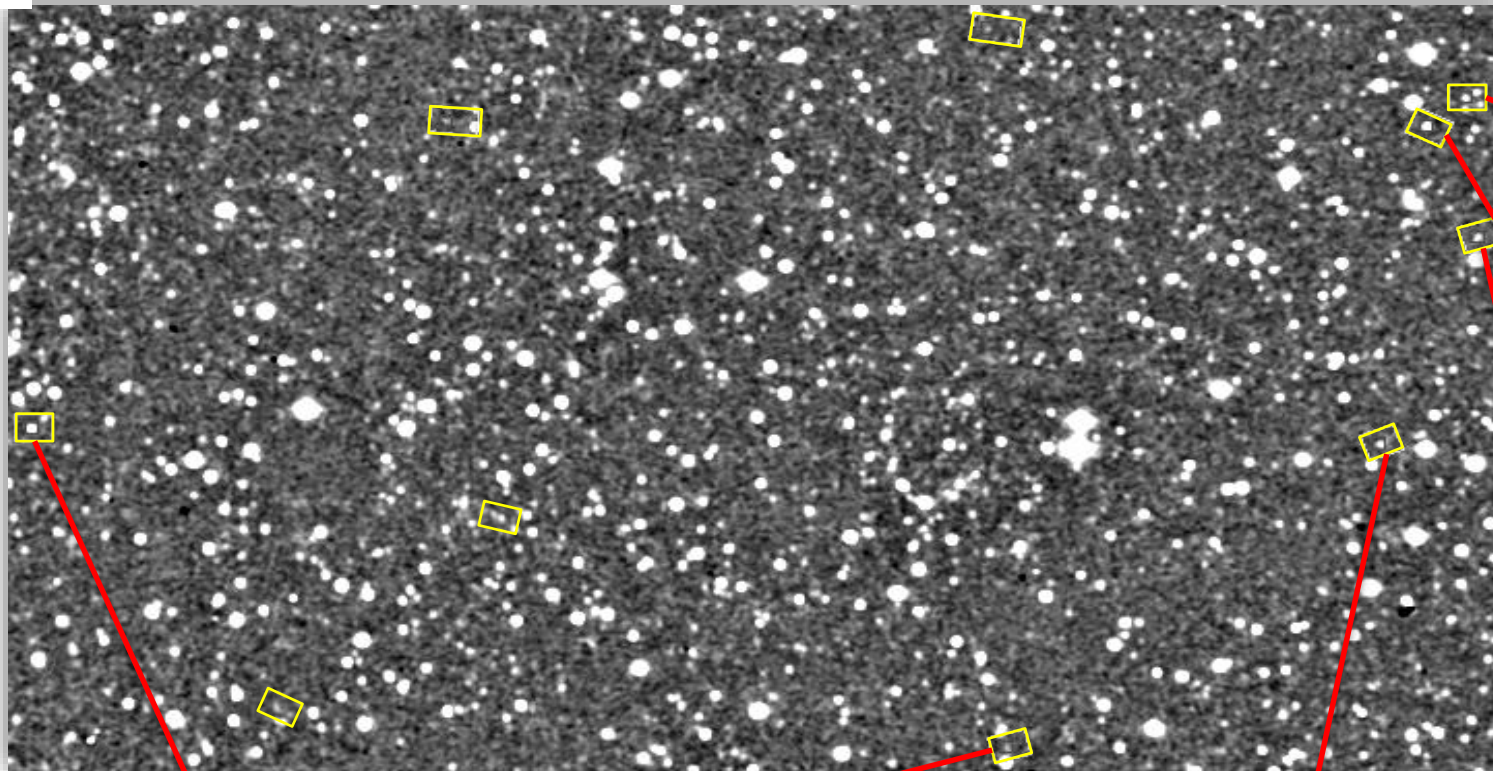


FrameSmooth





CPOSD CAN DETECT BOTH VERY SLOW AND VERY FAST MOVING OBJECT



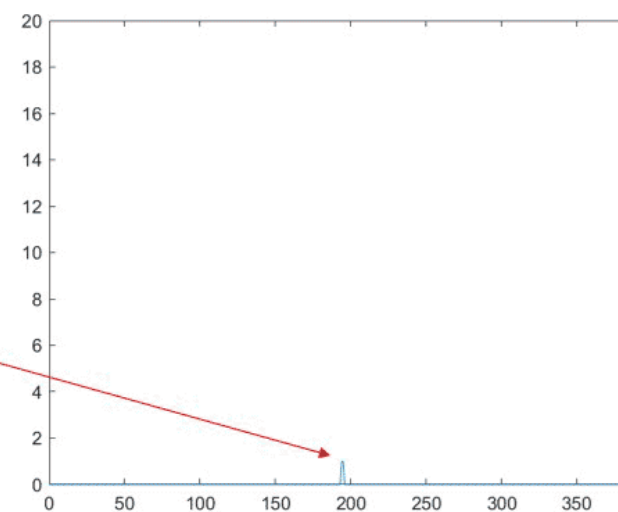
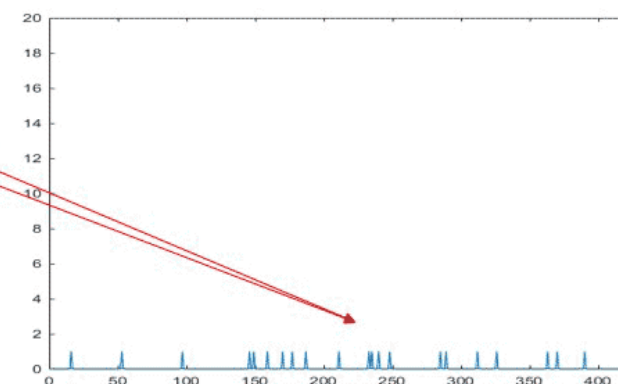
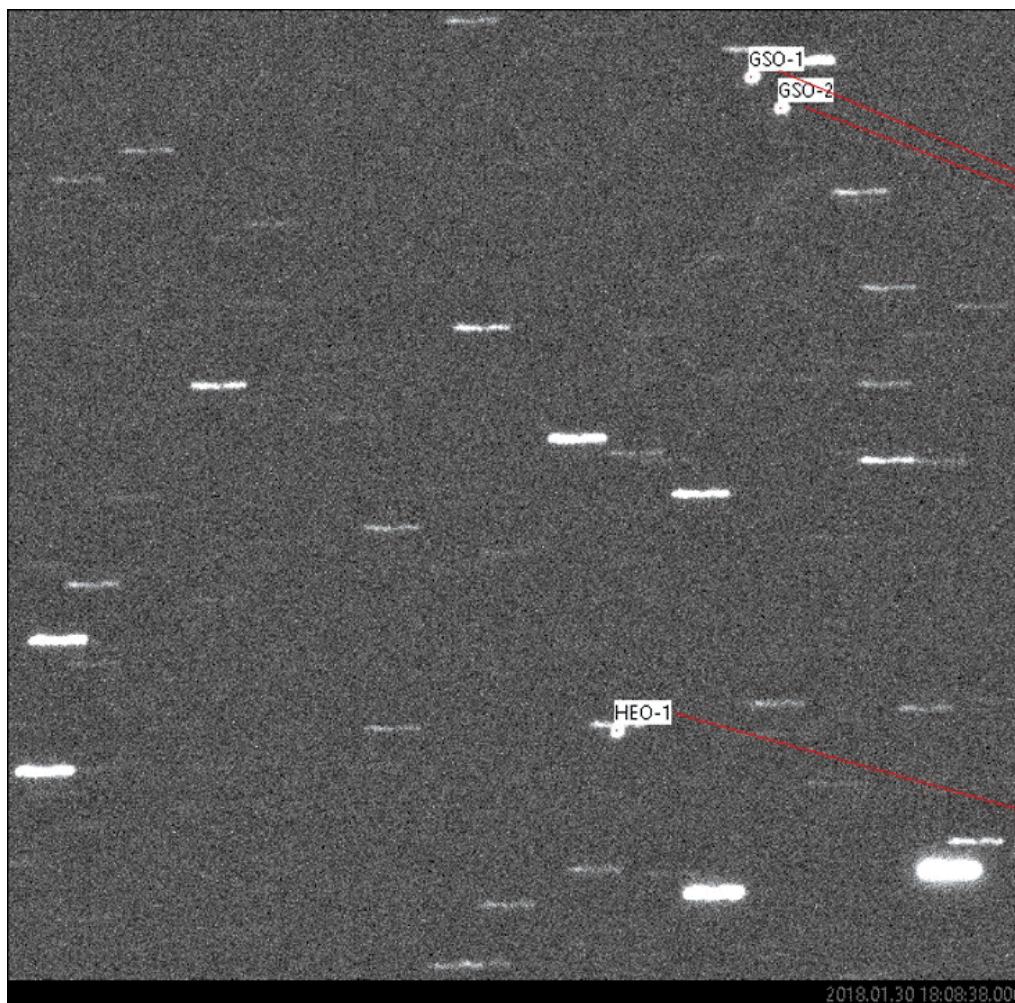
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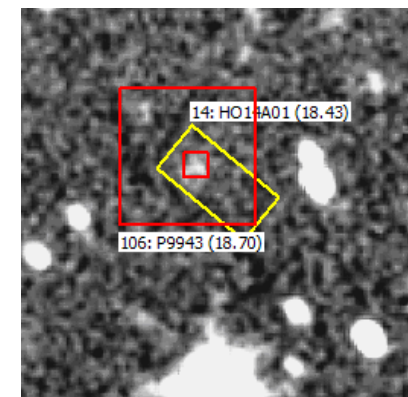
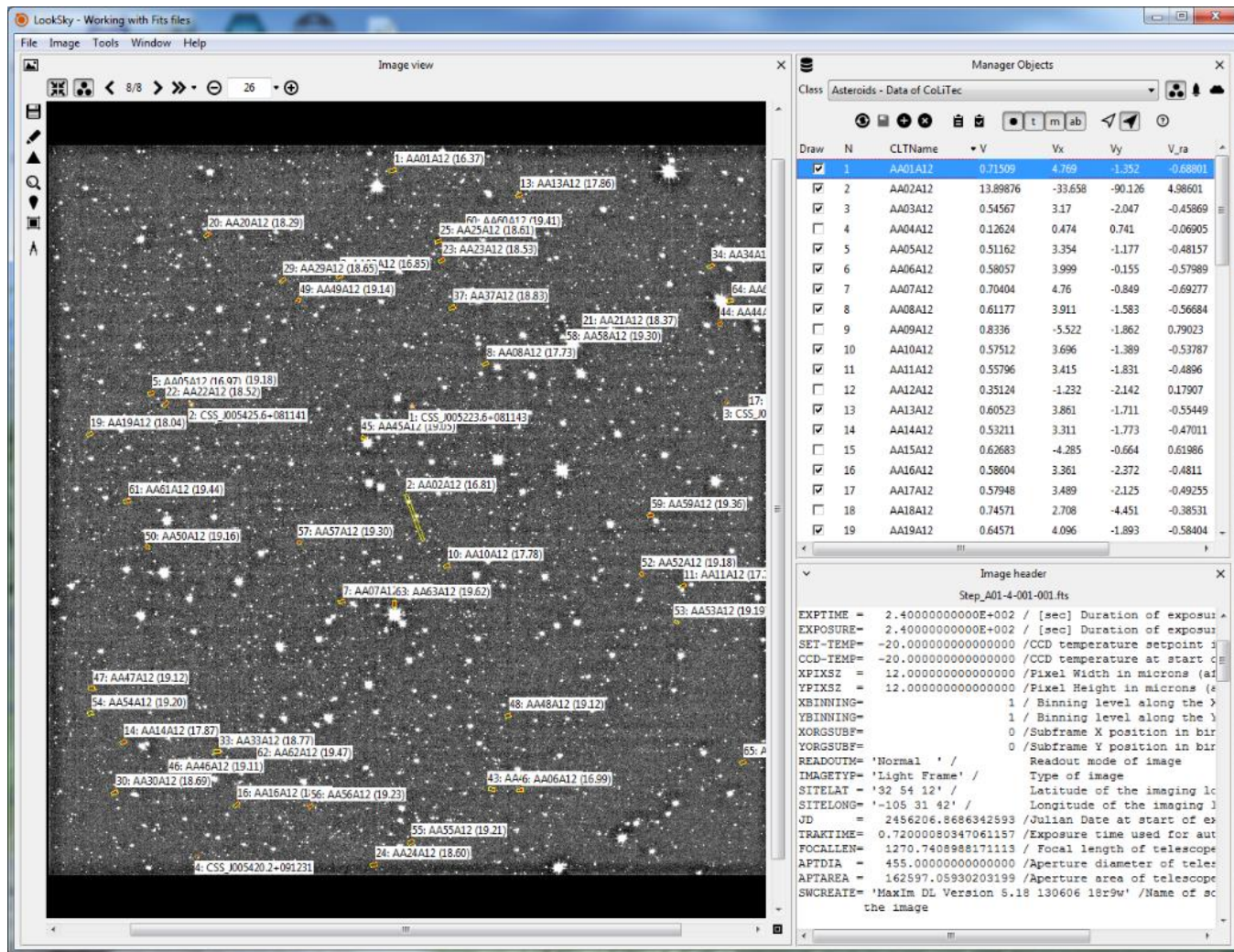
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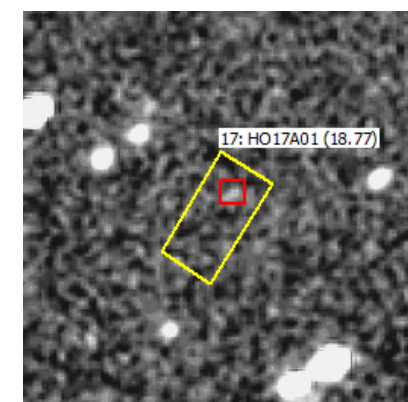
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GSO-HOUGH DETECTION METHOD

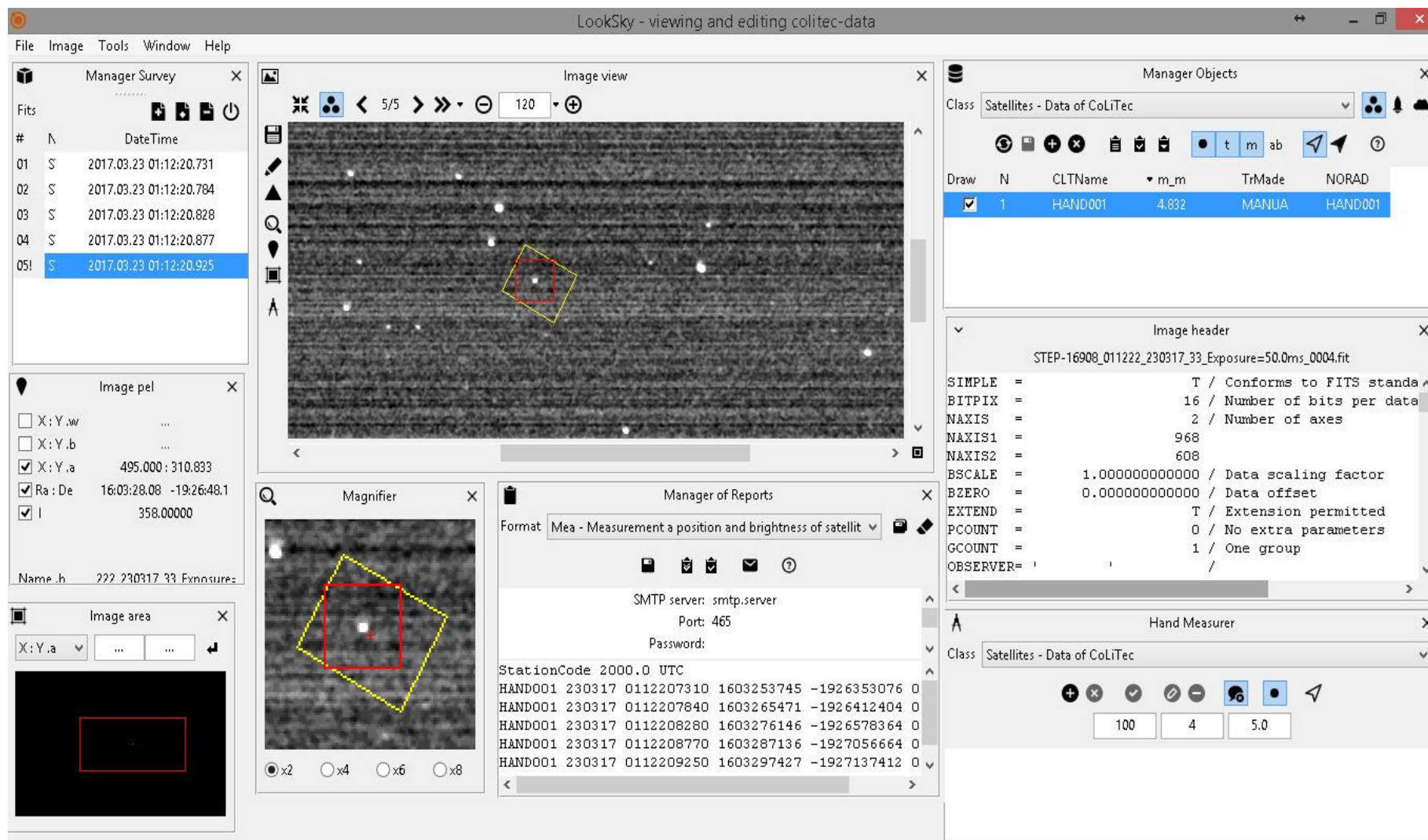




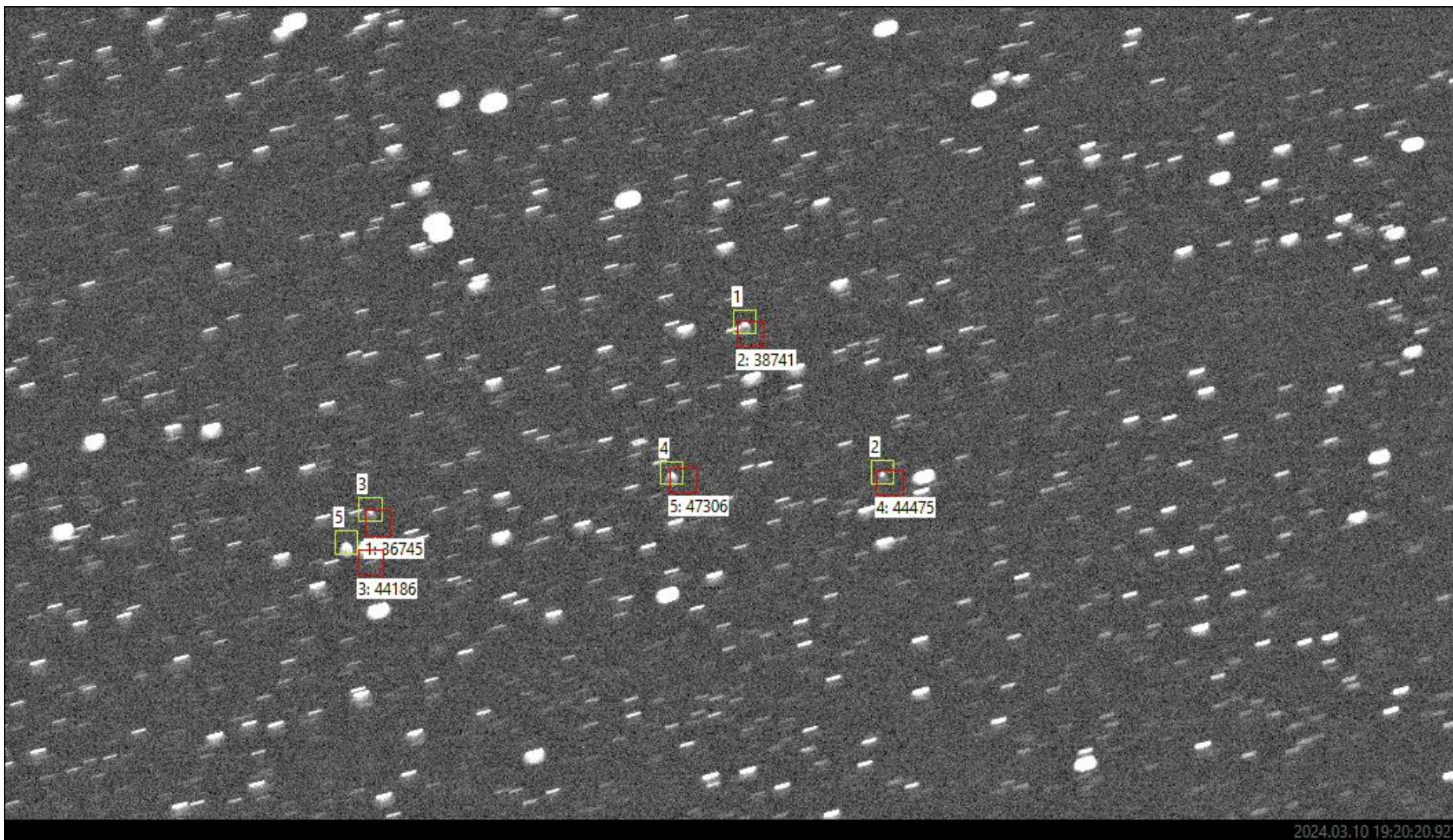
2013.04.29 03:24:47.000



2013.04.29 03:24:47.000



EXAMPLES OF RESULTS



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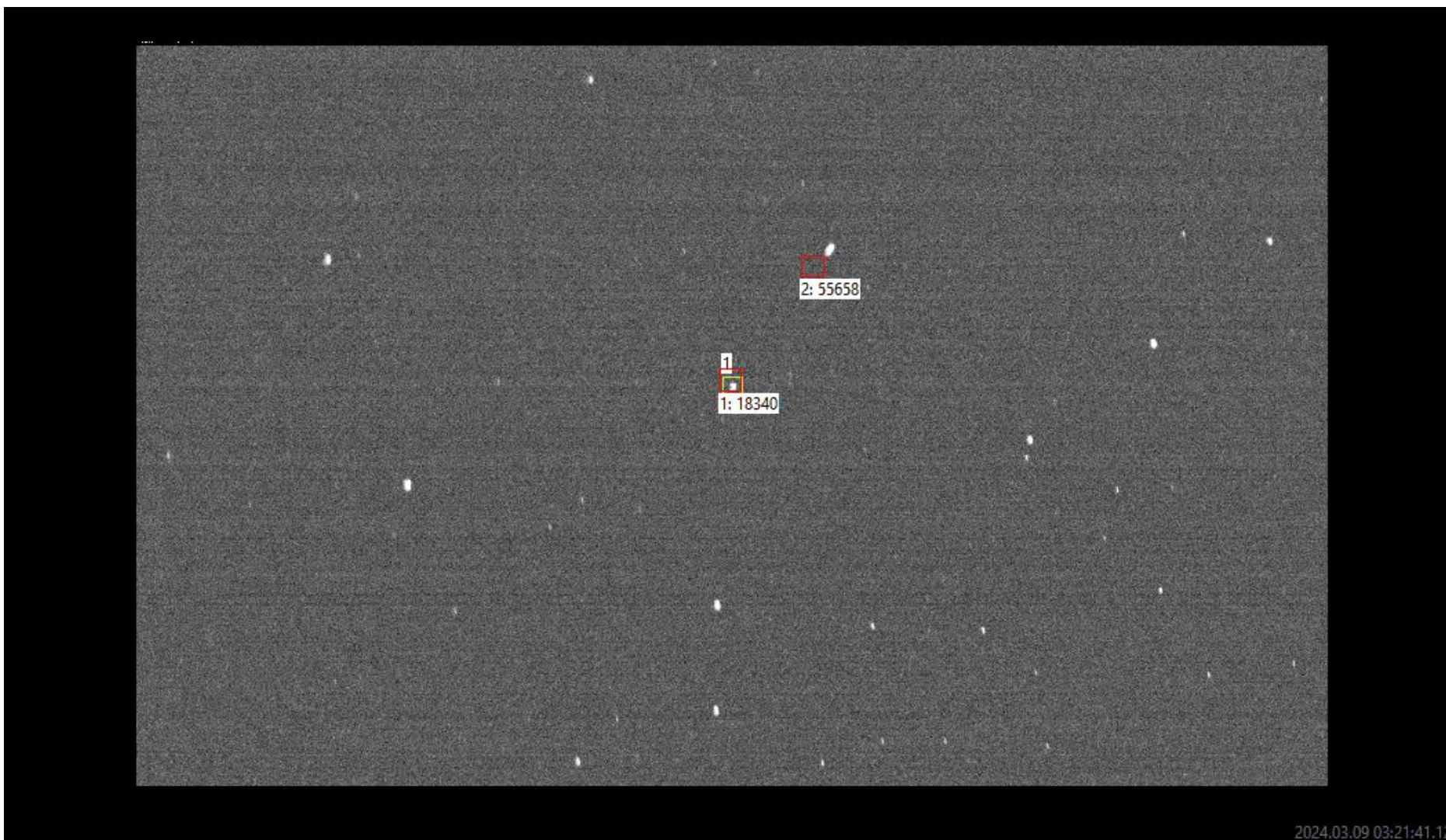
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EXAMPLES OF RESULTS



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PLANS FOR THE FUTURE



Online and mass photometry.

To implement the stacking of the frames in the given range of speeds in order to automatically find the super-faint objects of the Solar System.

Improving segmentation, fitting, astrometry, and more...

More details: <https://colitec.space/>

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THANK YOU FOR YOUR ATTENTION!

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