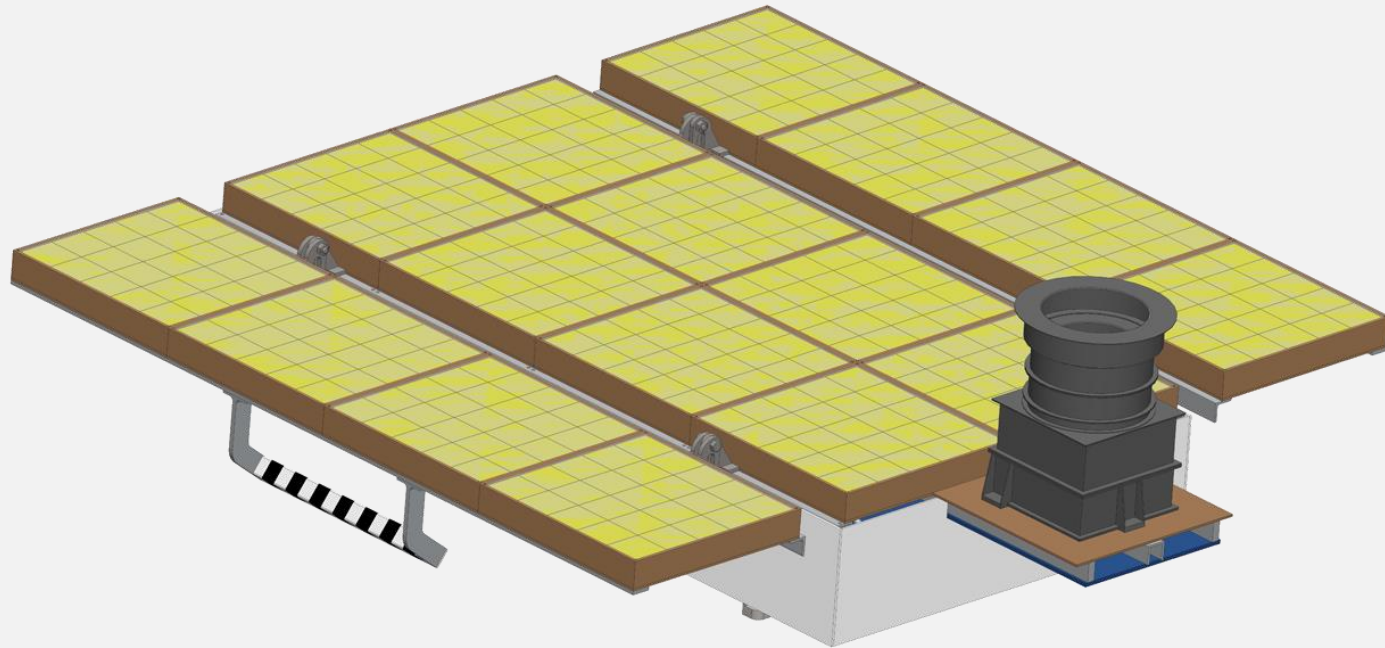


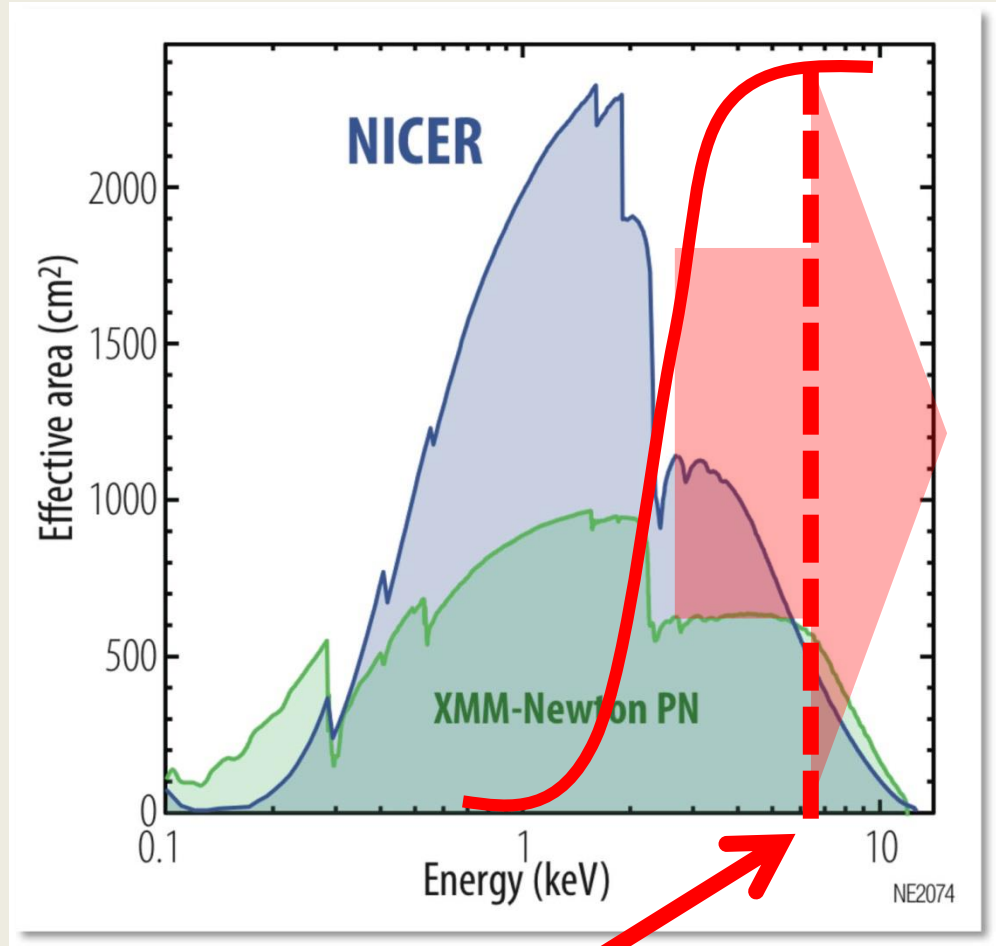
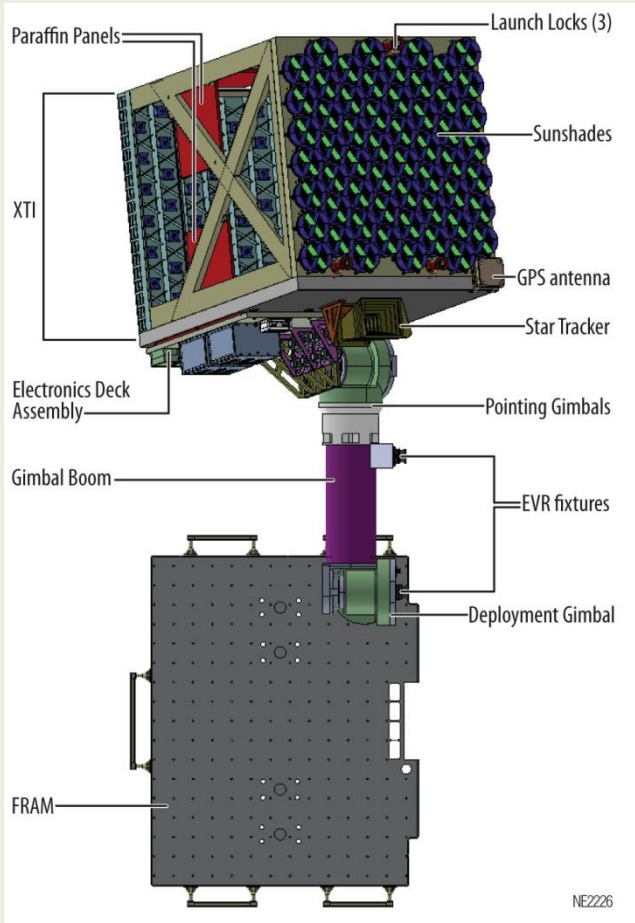
# MVN M2 - a new timing experiment on board the ISS



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S.Molkov, V.Arefiev  
Space Research Institute (IKI, Moscow)**

The experiment MVN M2 onboard the International Space Station is a lightweight X-ray spectrometer, which has a geometrical area of about 1 sq.meter and has a good energy and time resolution. We will use silicon drift detectors as a recording element, the field of view will be limited by a light collimator based on microchannel plates. The project is considered as a pathfinder for the future large area spectrometer "X-ray Microphone". In addition to solving technological problems we expect to solve several scientific tasks: measure of the movement of the emission lines in neutron stars and black holes, measure the energy spectra of the rapidly varying emission of neutron stars, search for the absorption lines in the spectra of neutron stars during bursts, testing of elements of the system of autonomous navigation of spacecraft using periodic signals from pulsars. MVN M2 will be installed on a special turntable on the Russian module of the ISS.

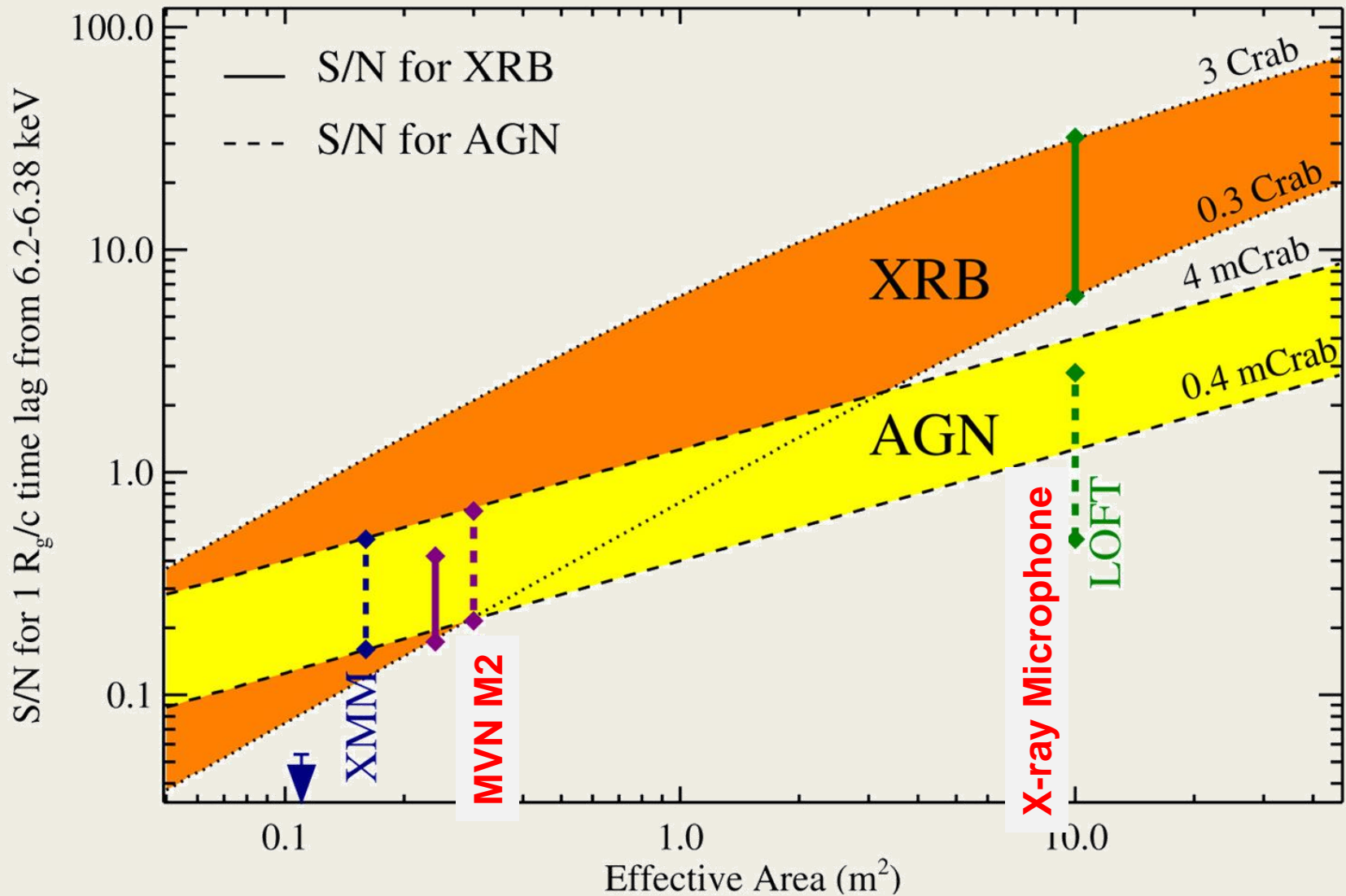
# MVN-M2 vs NICER (effective area)



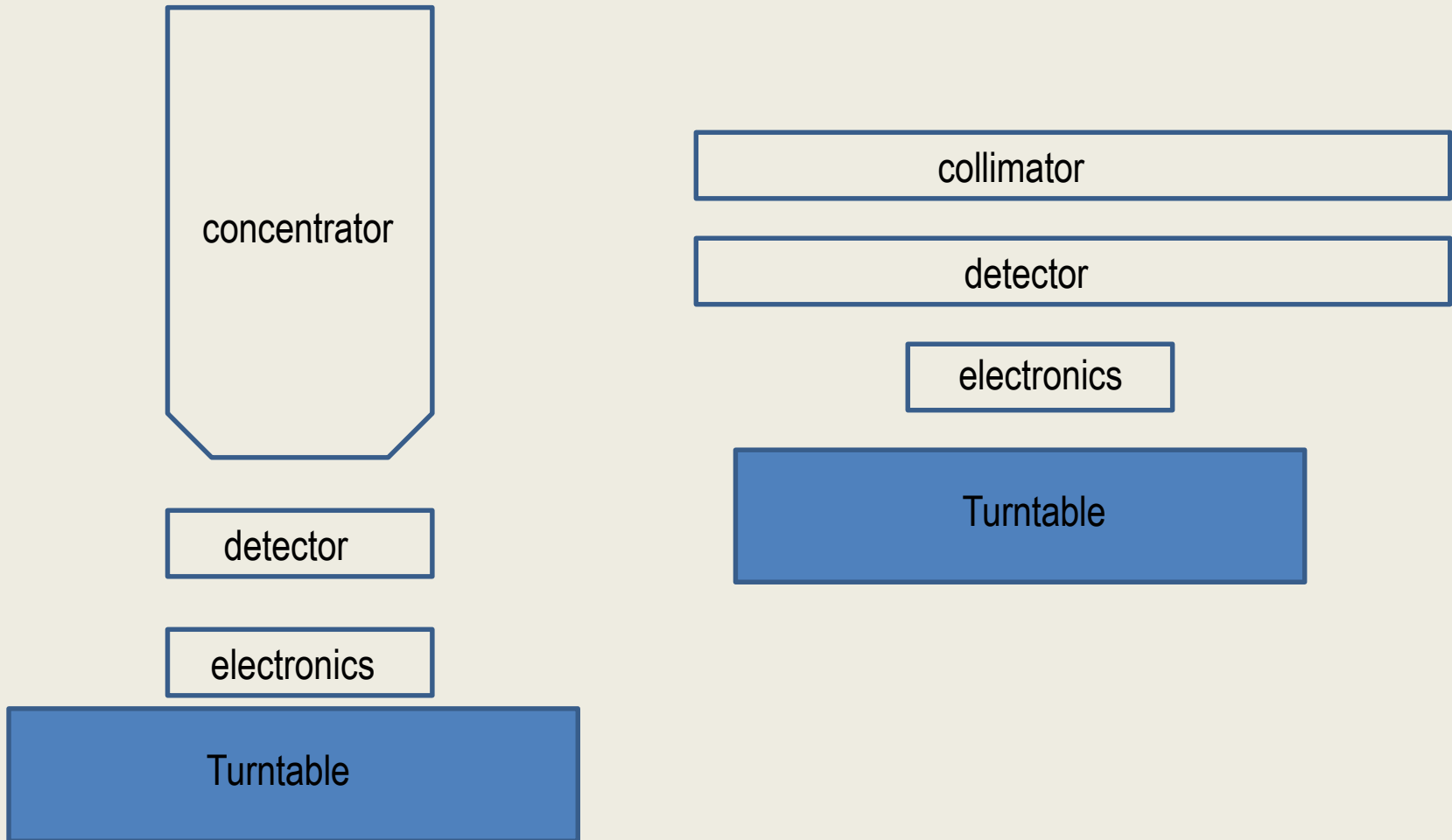
MVN-M2

Iron emission line

# Sensitivity in the emission iron line



# Two conceptions of the instrument



# Lightweight collimator – microchannel plates



The uniqueness of "BASPIK" is that you can make an individual order for MCPs manufacturing for concrete device, with concrete technical parameters.

Pb glass  
Width 1 mm  
Opaque for energies <30 keV  
Mass <7-8 kg/sq.m

## Size-shape factors

Parameter	Dimension	Value
Plate Dimensions	mm	90 × 70
Active Area	mm	not less than 86 × 66
Plate Thickness	mm	1
Pore Size	um	15
Channel Pitch	um	19
Channel Bias	degrees	8

# Silicon Drift Detector (SDD)

## Variant 1

Commerce crystals SDD.  
Production IKI



## Variant 2

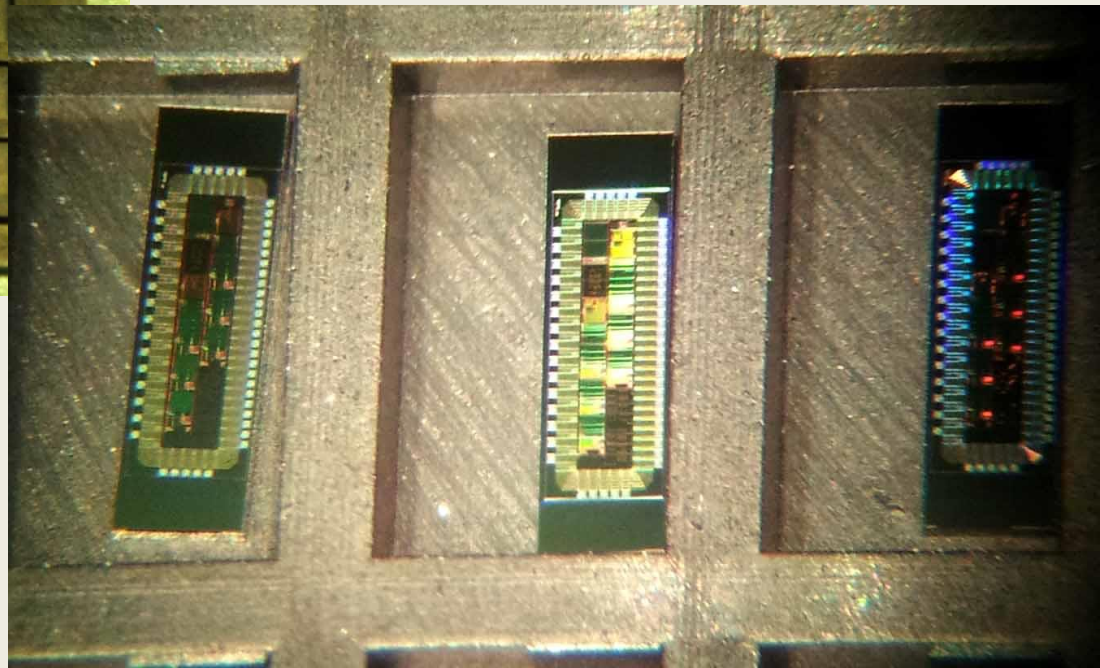
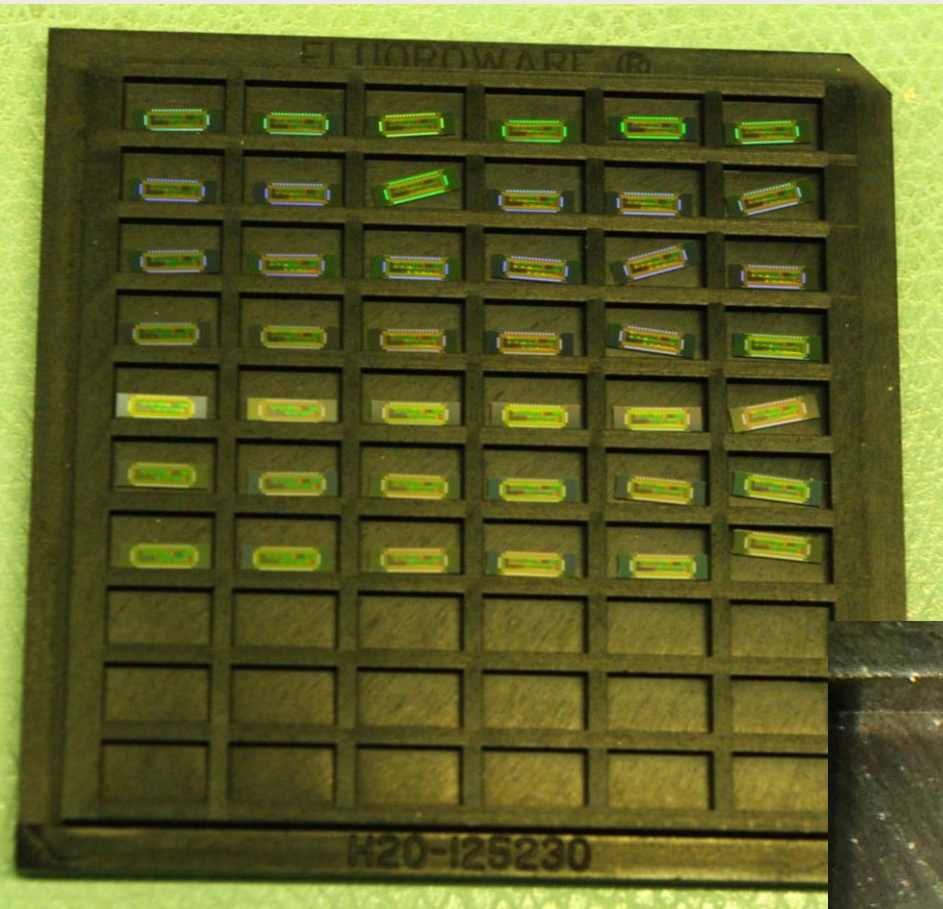
SDD detectors – prototype LOFT  
Collaboration with IAPS, Italy

(need to be discussed)



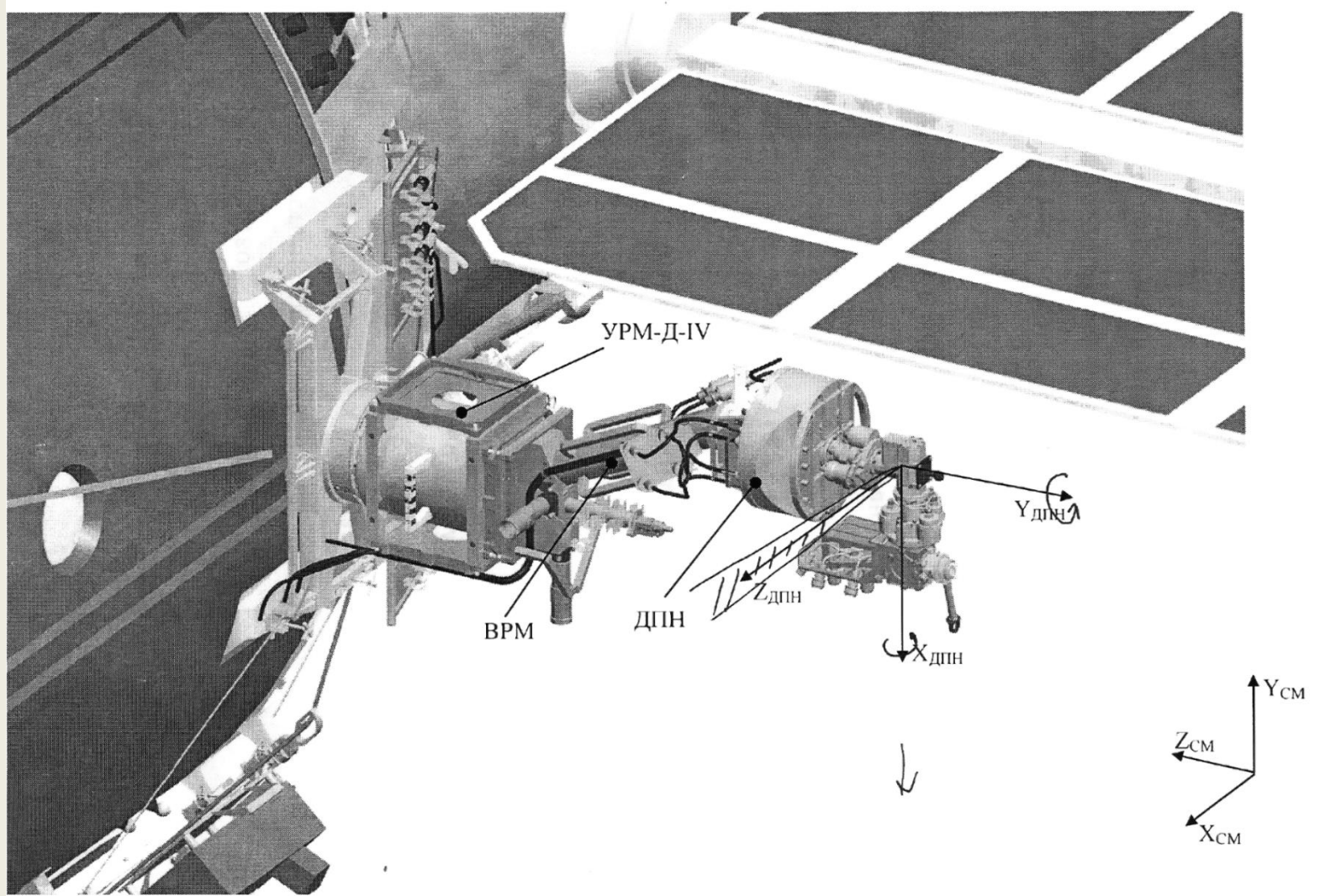
# ASIC for SDD

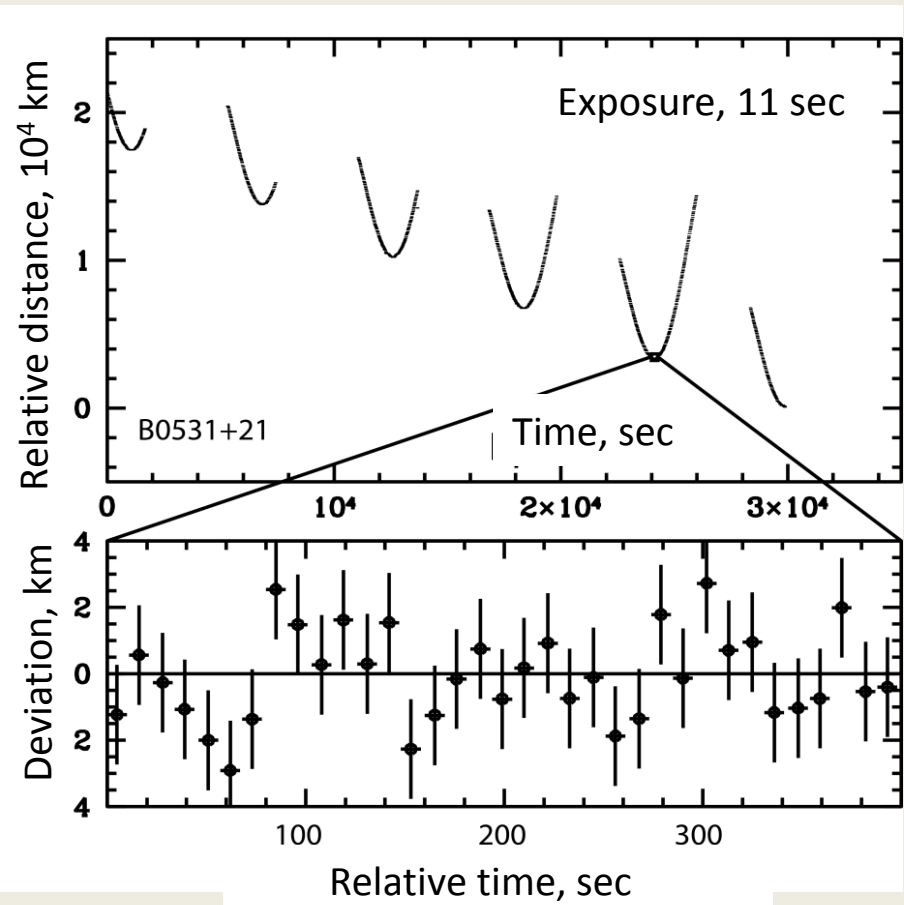
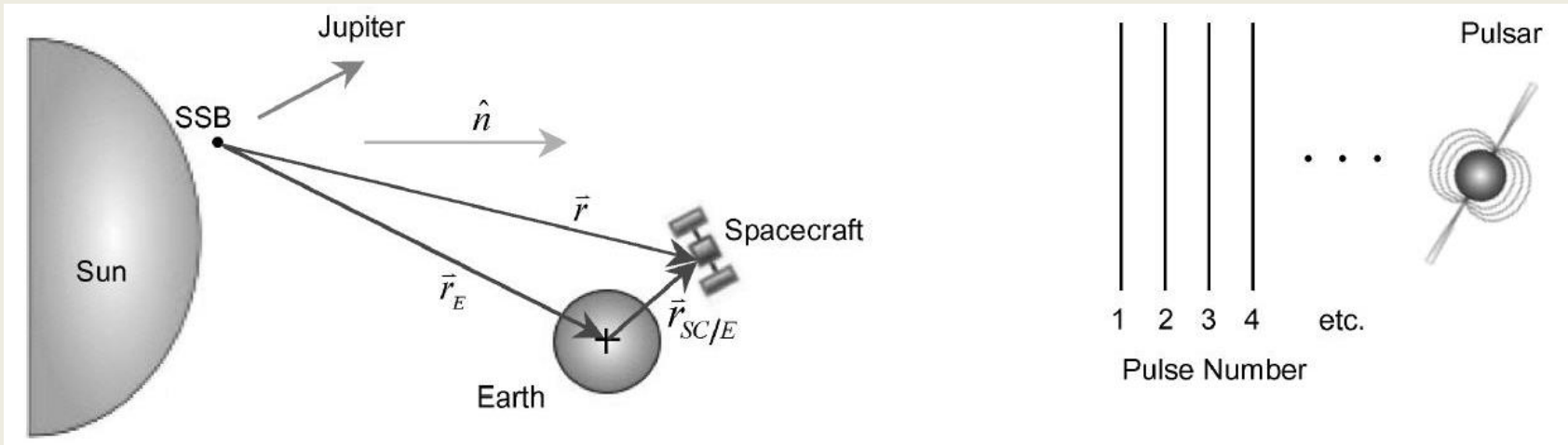
First run of the IC construction was done in 2014 in a collaboration of Space Research institute and National Research Nuclear University «MEPhI»





# Turntable platform on the Russian segment of the ISS





## X-ray navigation

Expected accuracy for the Crab observations, integration time 11 sec

# Technical variants of the detector deploying

