A demonstrator model (DM) of the Euclid’s focal plane array (FPA) has been integrated at CPPM and tested at LAM facilities in Marseille (France). The aim of this first model of the NI-DS is to demonstrate the validity of the integration procedure forseen for Euclid FPA, to check the behavior of the Sensor Chip System in a multi-detector configuration and to demonstrate the system ability to support thermal cycles and vibration tests.

### Euclid-NISP

The spectrophotometer of the EUCLID mission contains several subsystems (calibration unit, fiber/grammes wheels, mechanical assembly, optical alignment and focal plane).

The focal plane array of the NISP (NISP-FPA) is the mechanical support of the detector system (NI-DS).

NI-DS host 16 H2RG infrared detectors, each one will be integrated in this subsystem at CPPM before delivery to ESA in 2017.

- **SCE** supports the SCs. It is made of aluminum and fixed onto the P4 panel by 3 Invar blades. Composed of a main body and removable lid for integration purposes.
- The NCSS (Cold Support Structure) supports the SCAs and ensures their co-planarity. Made of Molybdenum in order to ensure the best thermo-mechanical behavior, giving the structure of the SCAs. Fixed to P4 by 3 Titanium blades.
- The NI-P4 interfaces the full NI-FPA with the NISP automation. This panel, SiC made, is screwed directly onto the instrument and supports all the remaining parts of the NI-FPA.

### Euclid infrared detectors

- **SCE**
- **Flex**
- **SCA**

#### HI3RG detectors
- 16 detectors in the FPA
- 2048x2048 hybrid pixels each
- 18µm pitch / 2.3 µm cut-off
- Provided by Teledyne Imaging Sensors under ESA/NASA contract

### DM Tests

**Dark performances**
- No illumination in DM setup
- Only dark and noise available for testing
- Full evaluation of performances foreseen at SPM and DM level

**Conducted EMC tests**
- Electromagnetic Compatibility conducted tests consist of the injection of noise at a given frequency and power and see how the system reacts

### Integration of the NI-DS

The Demonstrator Model consisted on two separate periods:

- First procedure test between LAM & CPPM
- IPNL readout software to test
- Using Markury electronics for synchronized arbitrary sequences (UNIX)

**Multi detector acquisition system**
- TIB acquisition chain ready to acquire one detector
- Using Markury electronics for synchronized acquisitions of all 4 ASICs
- IPNL readout software in test

**Stable acquisition system acquired more than 7TB of data during DM run, without critical error during acquisitions.**

### Conclusions on the Demonstrator Model run

Demonstrator Model successfully integrated and tested in April 2015.