Outline of ECLAIRs Science presentation for the FAR

JL. Atteia,

on behalf of the ECLAIRs Science Team

Outline of ECLAIRs Science presentation at FAR

- **For the FAR, we propose to present:**
  - **The compliance with the Science Requirements, based on ground measurements and simulations.**
  - **The instrument configuration at the beginning of the commissioning phase.**
  - **An outlook of the plans for the commissioning phase.**

Compliance with Science Requirements

- **The overall performance of ECLAIRs is compliant with the requirements, as demonstrated at the Acceptance Review.**

- **The performances of the detection plane and of the on-board trigger and localisation software have been measured and found nominal.**

  → Detailed information on the performance of the detection plane can be found in the paper « **On-ground calibration highlights for the SVOM/ECLAIRs camera** », by Godet et al. (SPIE, Volume 12181, id. 121815O, 2022).

- **This ensures the proper performance of the instrument in terms of:**
  - **Number of GRBs**
  - **Alert distribution and rate of false alerts**
  - **Source localisation**
  - **Spectral response**
  - **Timing**

- **Note: in this firs part we can include many figures to illustrate the performance of ECLAIRs**

ECLAIRs Science Configuration

- **After the LEOP, the ECLAIRs science configuration is simple, it goes through the following steps:**
  - **Configure the detection plane: energy thresholds, noisy pixels, energy bands**
  - **Set the SAA limits**
  - **Measure the background**
  - **Adjust the trigger parameters**
  - **Adjust the on-board table of localization biases**

ECLAIRs operations during commissioning

- After configuring the detection plane and the trigger, our goal is to start a « safe trigger » (with no alerts) quickly after the LEOP.
  - This will serve to adjust the trigger parameters.
  - In case of a GRB, this will provide a first check of ECLAIRs localisations.

- The next step will be the validation of ECLAIRs performance with known sources. This will serve to:
  - Validate ECLAIRs localizations and adjust the bias tables for the localizations.
  - Inter-calibrate ECLAIRs with GRM and MXT.
  - Validate the spectral response.
  - Validate the timing.

- After these tests the distribution of ECLAIRs alerts to the satellite will be allowed, and nominal operations can start.