LIME - Low Energy Efficiency
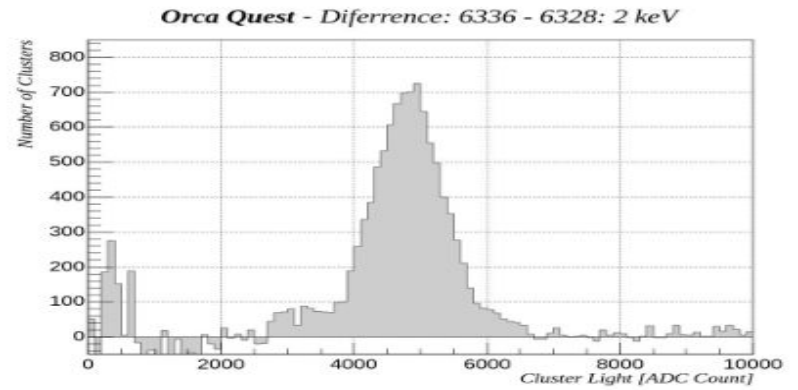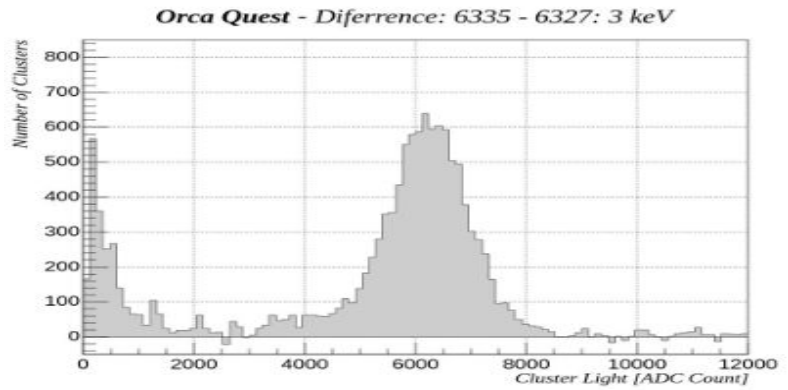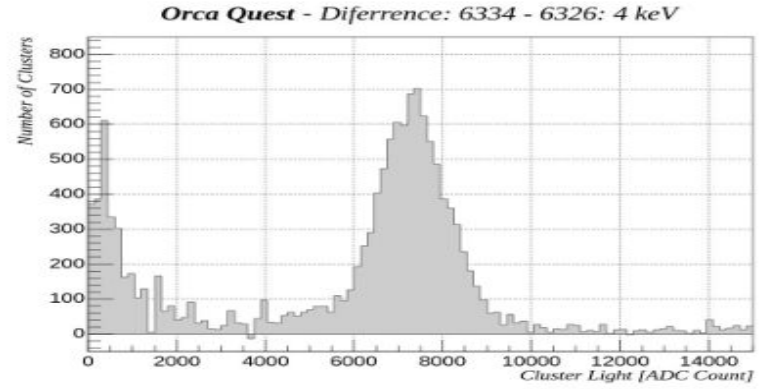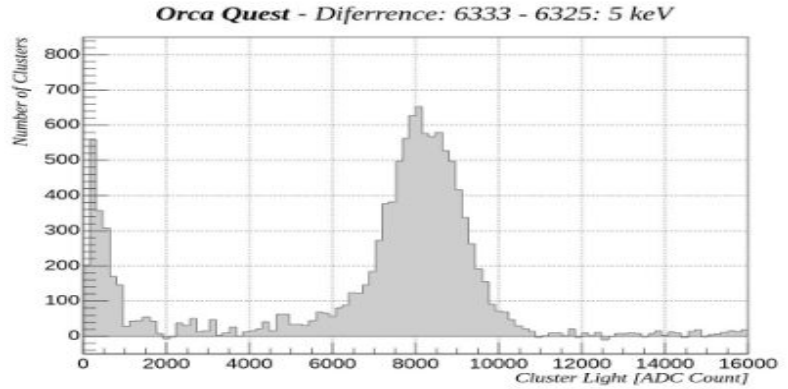## GEM1 V Scan Analysis

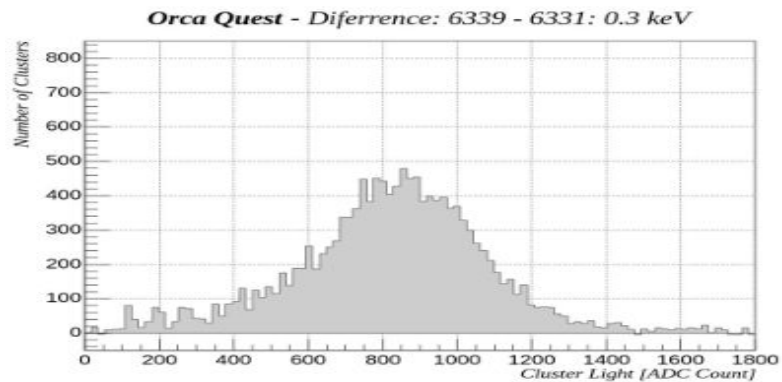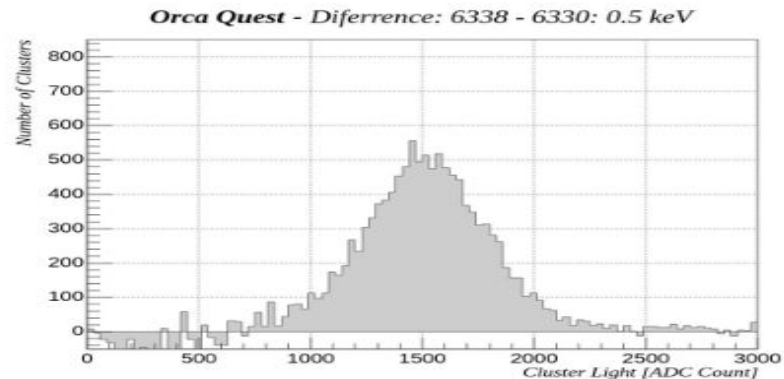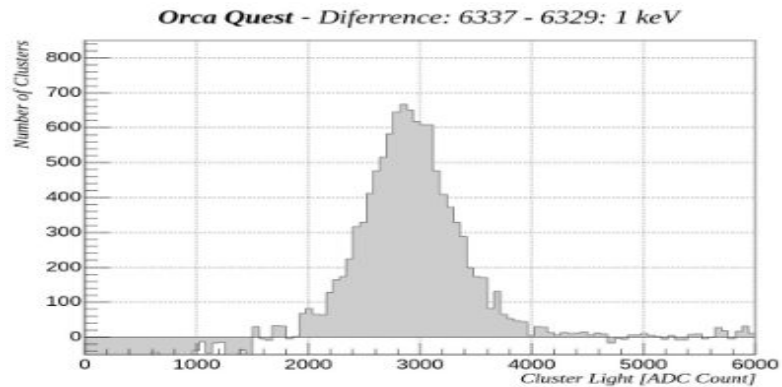*Bernardo Deps Almeida*
with Rafael A. Nóbrega

Tasks

- Compare three different sensors:
  - FUSION BT
  - FUSION QUEST
  - THORIT *(naked FLASH)*

- Tasks
  - Noise study   DONE
  - Linearity   DONE
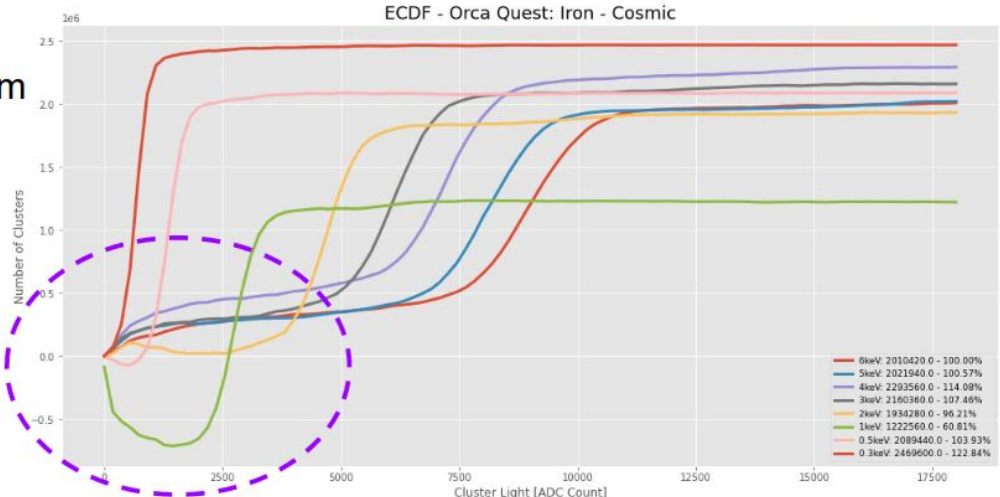 - **Efficiency**   **ON-GOING** ← TODAY

QUEST analysis (0.3 keV to 6 keV)

Orca Quest - Diferrence: 6333 - 6325: 5 keV

Orca Quest - Diferrence: 6334 - 6326: 4 keV

Orca Quest - Diferrence: 6335 - 6327: 3 keV

Orca Quest - Diferrence: 6336 - 6328: 2 keV

QUEST analysis (0.3 keV to 6 keV)

Orca Quest - Diferrence: 6337 - 6329: 1 keV

Orca Quest - Diferrence: 6338 - 6330: 0.5 keV

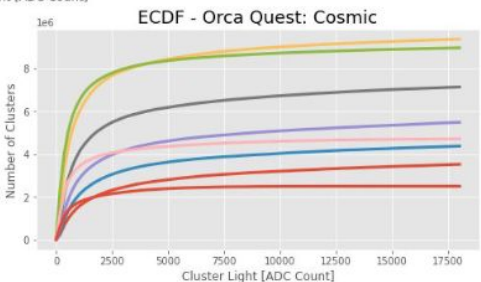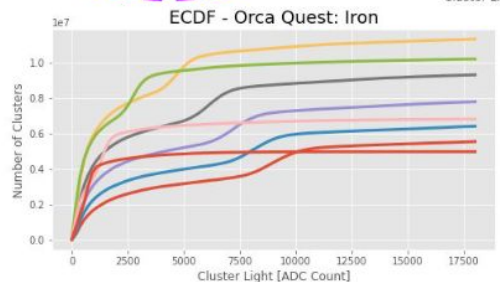**Orca Quest** - Diferrence: 6339 - 6331: 0.3 keV

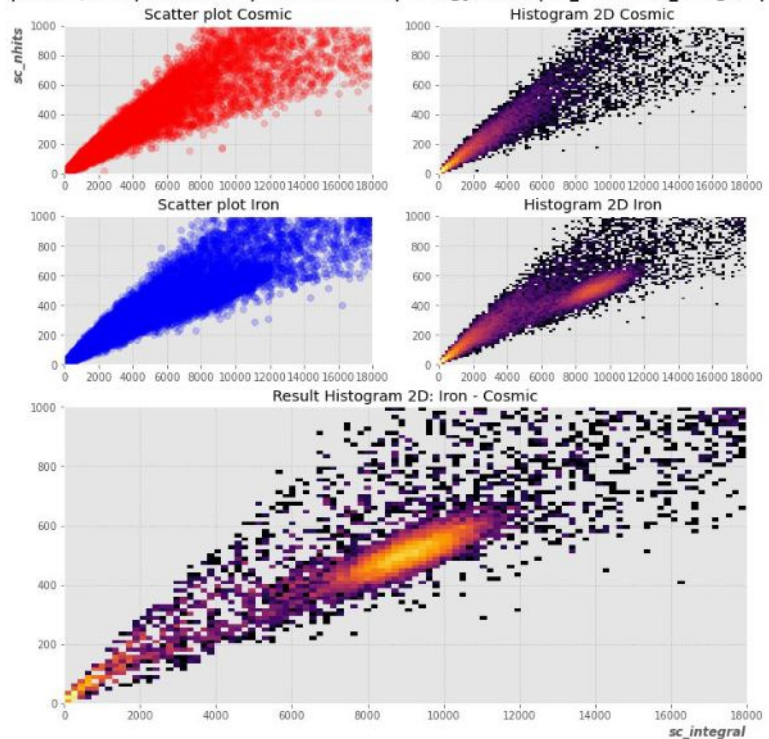# QUEST analysis (0.3 keV to 6 keV)

The Problem

The noise/background presented during the NRAD and the ER data taking seems different

QUEST analysis (0.3 keV to 6 keV)

| Orca Quest | Iron: 6332 | Cosmic: 6324 | Energy: 6keV | sc_nhits x sc_integral |

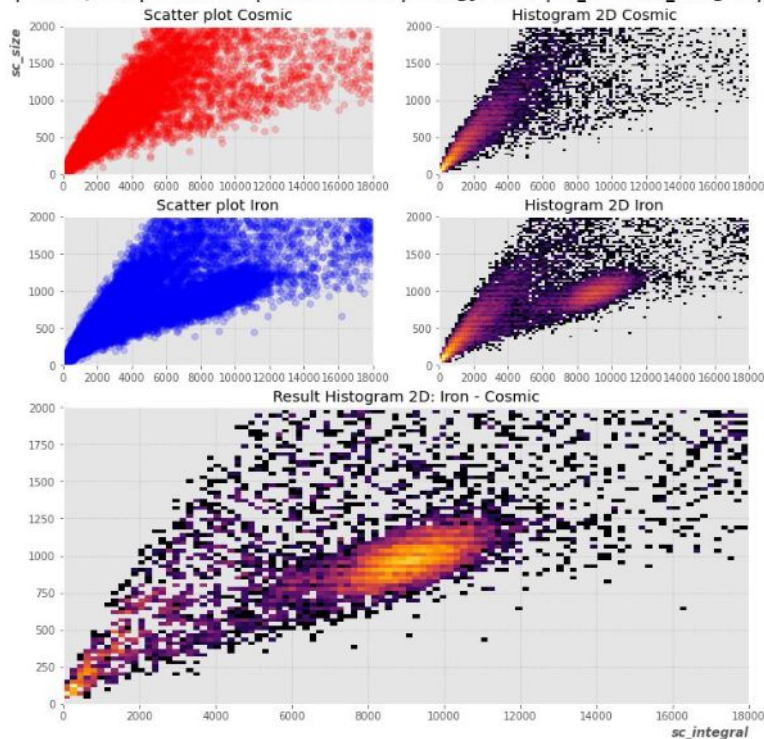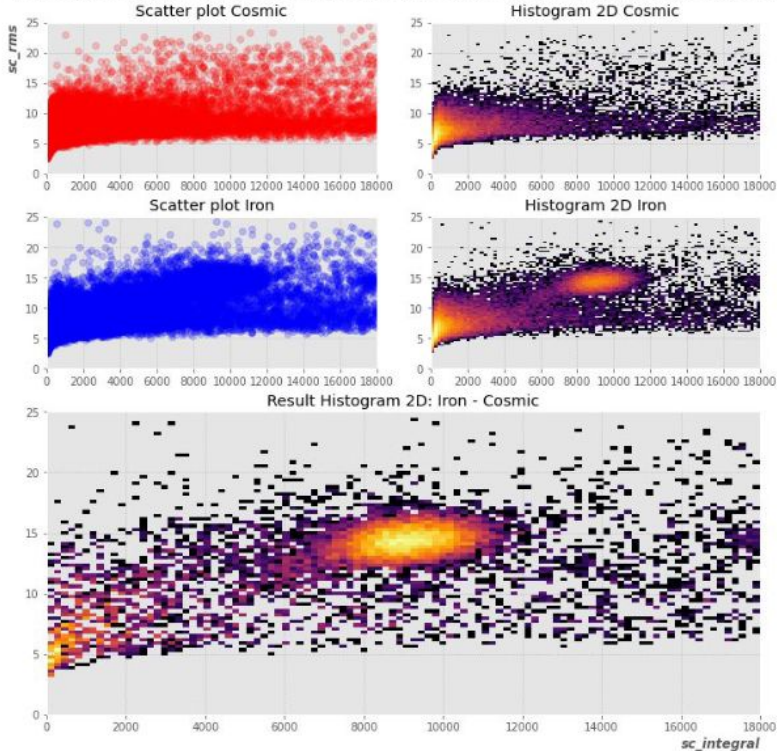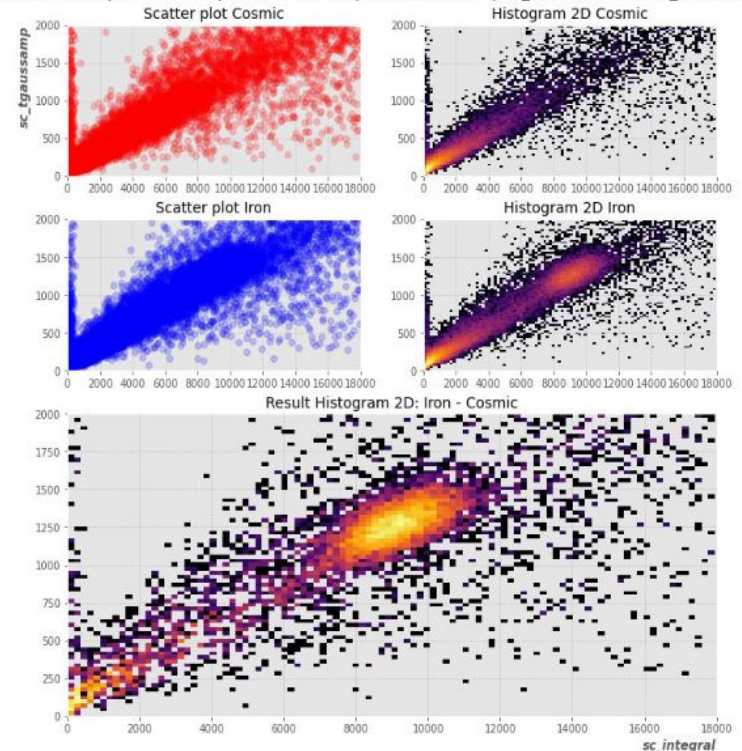| Orca Quest | Iron: 6332 | Cosmic: 6324 | Energy: 6keV | sc_size x sc_integral |

QUEST analysis (0.3 keV to 6 keV)

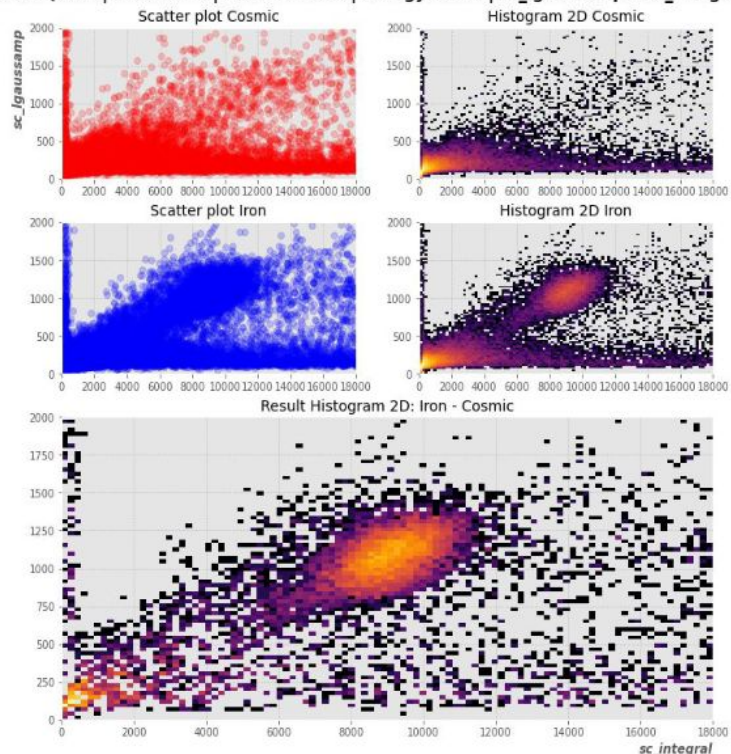| Orca Quest | Iron: 6332 | Cosmic: 6324 | Energy: 6keV | sc_rms x sc_integral |

| Orca Quest | Iron: 6332 | Cosmic: 6324 | Energy: 6keV | sc_tgaussamp x sc_integral |

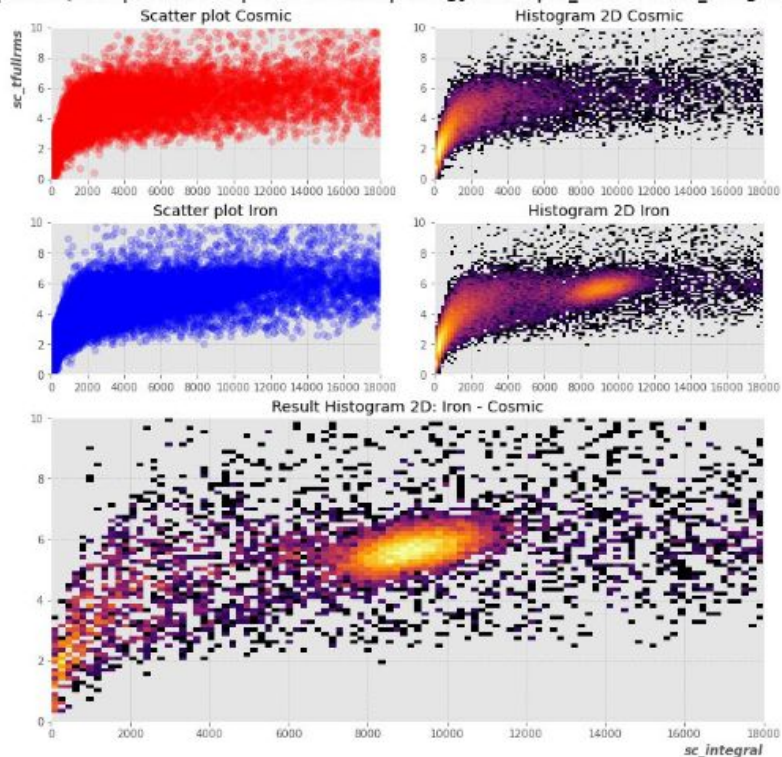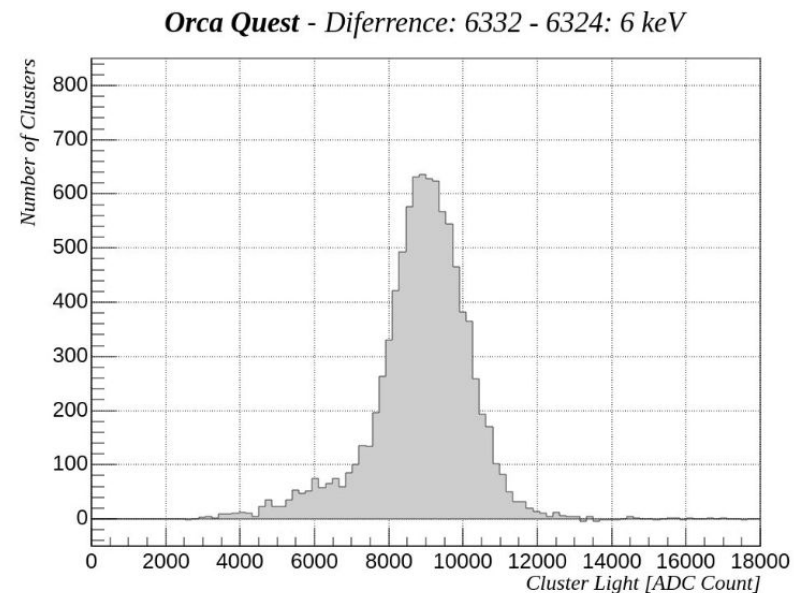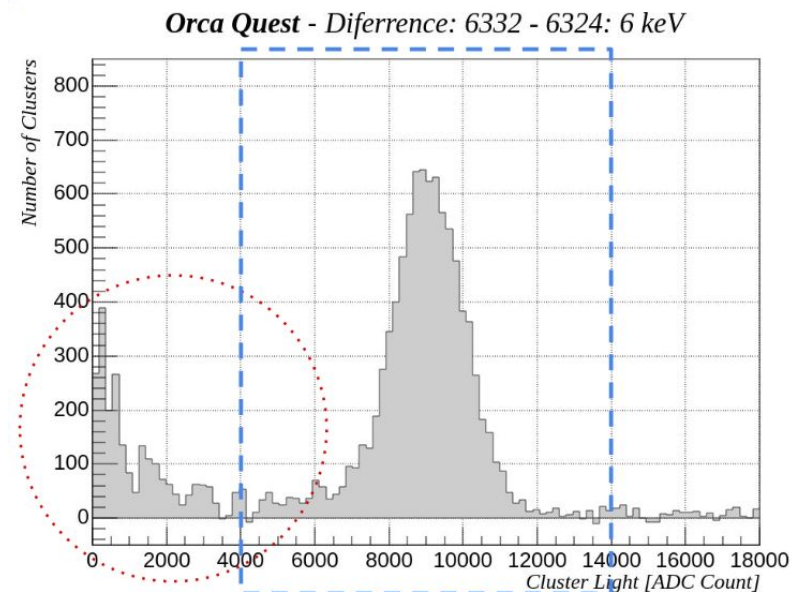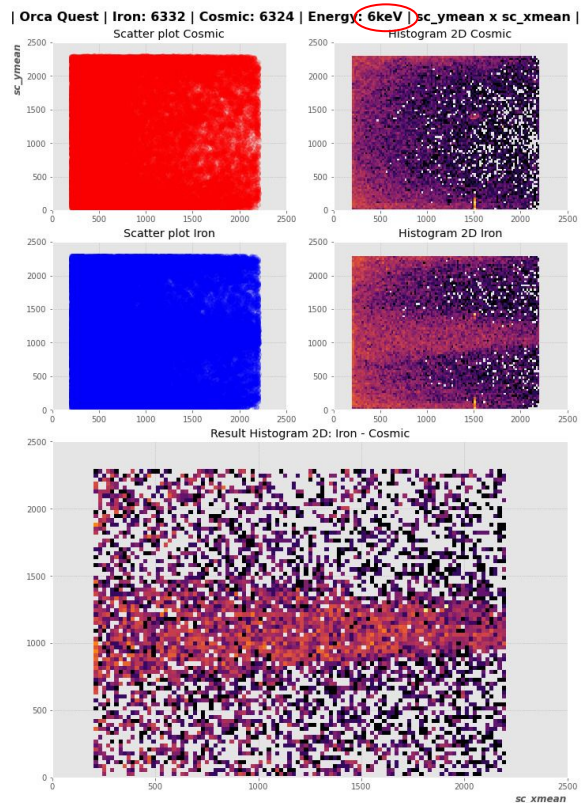# QUEST analysis (0.3 keV to 6 keV)
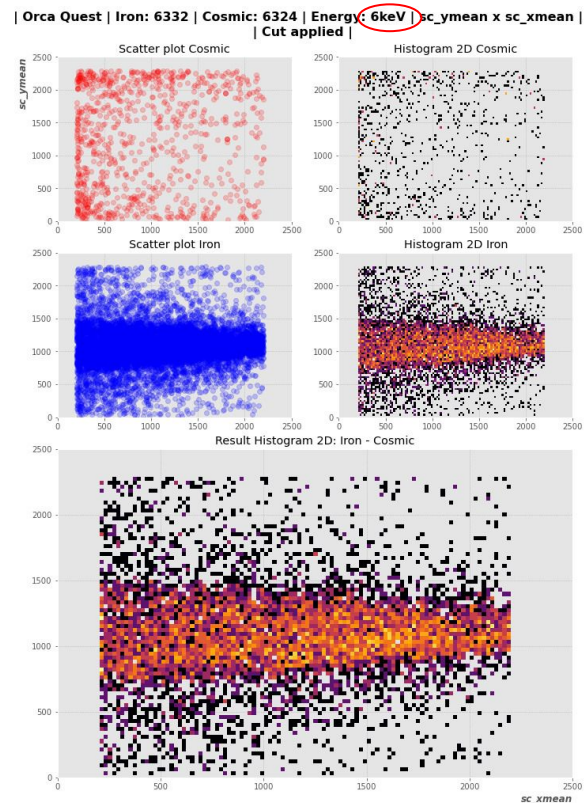
QUEST analysis (0.3 keV to 6 keV)

QUEST analysis (0.3 keV to 6 keV)

							Orca Quest			
Energy	**Slimness**	**sc_nhits >**	**sc_nhits <**	**sc_rms >**	**sc_rms <**	**sc_size >**	**sc_size <**	**sc_tgaussamp >**	**sc_tgaussamp <**	**sc_lgaussamp >**
6 keV	0.4	200	800	7	20	500	1500	500	1800	500
5 keV	0.38	200	800	7	20	500	1500	500	1800	500
4 keV	0.4	200	700	7	20	400	1400	400	1600	500
3 keV	0.45	200	700	6	16	400	1300	400	1600	400
2 keV	0.55	150	600	6	15	400	1200	300	1200	300
1 keV	0.8	100	500	5	12	300	1000	200	800	200
0.5 keV	0.5	50	300	4	10	200	800	50	500	100
0.3 keV	0.25	25	200	4	9	100	500	50	300	50

QUEST analysis (0.3 keV to 6 keV)

QUEST analysis (0.3 keV to 6 keV)

CUT

QUEST analysis (0.3 keV to 6 keV)
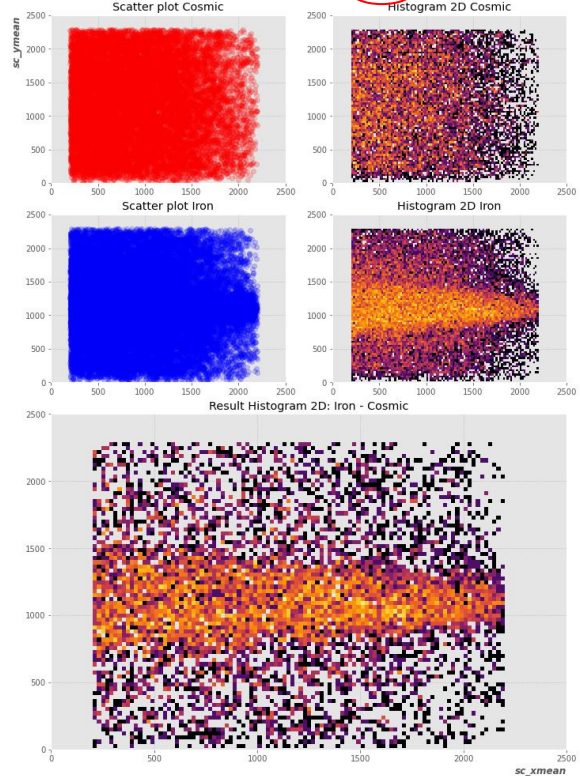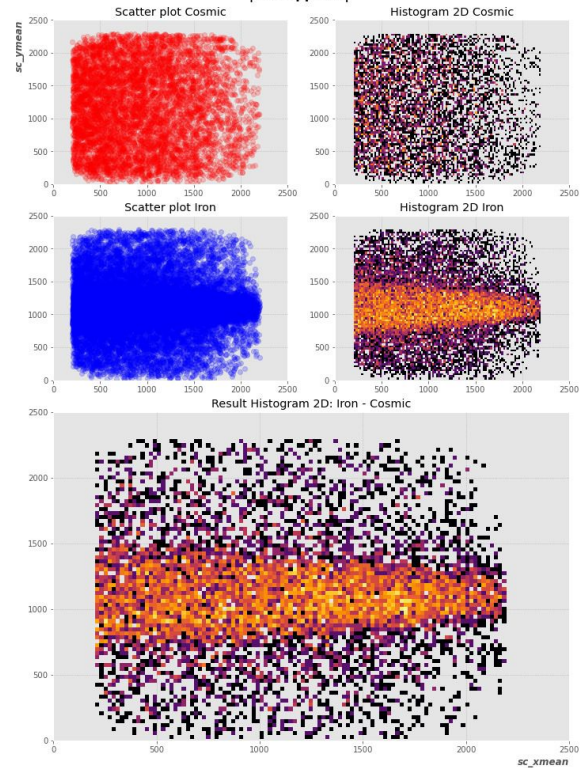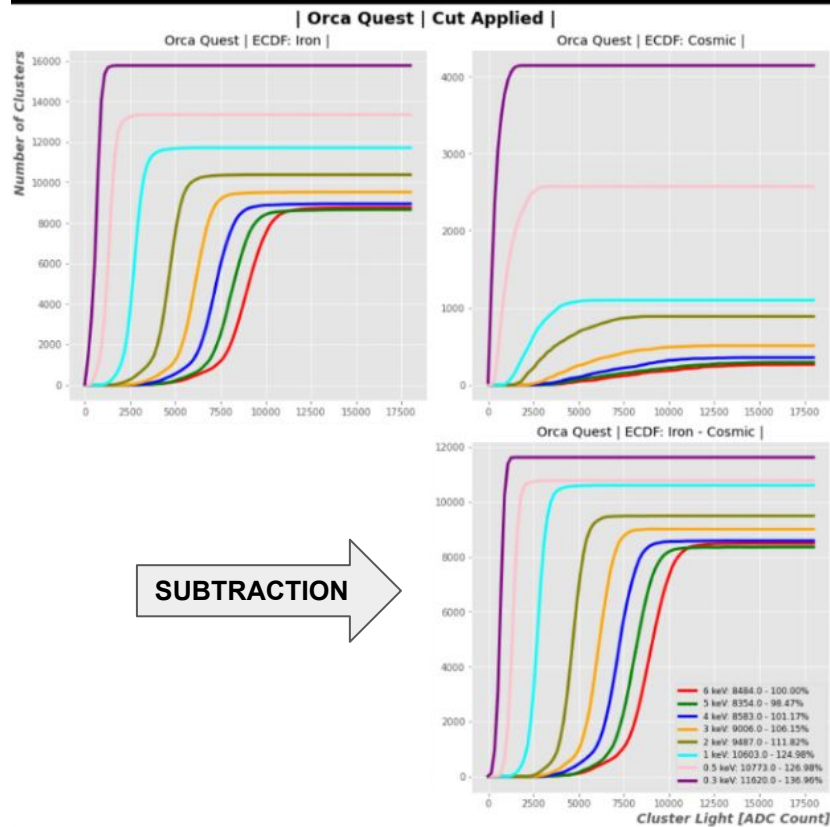
For the lower energy region we are more susceptible to noise/background.

However it seems that there is a consistent increase of noise/background in the ER dataset when compared to NRAD

????

Partial conclusions

- For low energy measurements, we could not completely subtract the noise/background events

- We are still trying to understand it

- We have two solutions in mind:
  - Try more complex cuts
  - Try to use ER dataset only and fit two curves

Orca Quest | ECDF: Iron |