

LJU PSPMT: diary 2

A. Studen H. Kagan N. Clinthorne

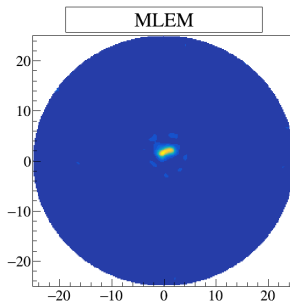
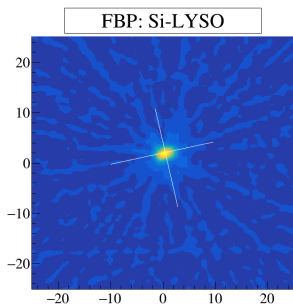
Department of Physics,
Ohio State University,
Columbus, OH

Institut Jožef Stefan
Odsek za eksperimentalno fiziko osnovnih delcev
andrej.studen@ijs.si



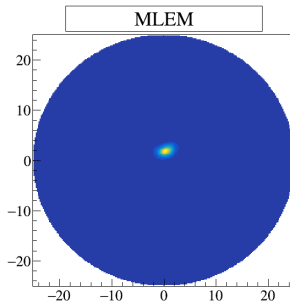
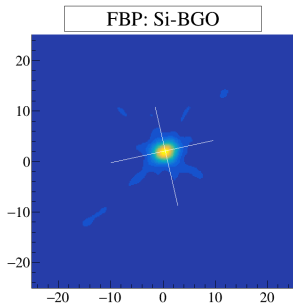
July 26, 2018

PET: Si-LYSO



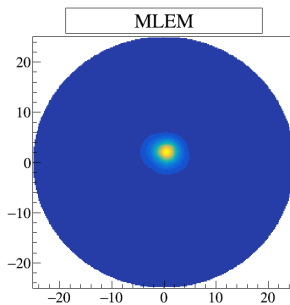
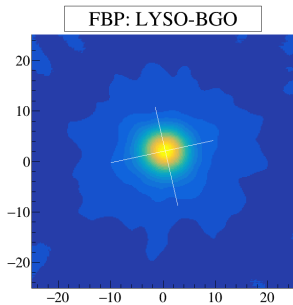
- 2018-07-05,0, 2018-07-04,1 and 2018-06-28
- MLEM (40) iterations, Si-LYSO coincidences, twin source.
- 90 s/p, 3 runs combined, 22,500 events
- Line: $(-9.88897, -0.264768) \rightarrow (9.52937, 4.10390)$
- After collimator removal

PET: Si-BGO



- 2018-06-15, run0
- MLEM (40) iterations, Si-BGO coincidences, twin source.
- 120 s/p
- Line: $(-9.88897, -0.264768) \rightarrow (9.52937, 4.10390)$

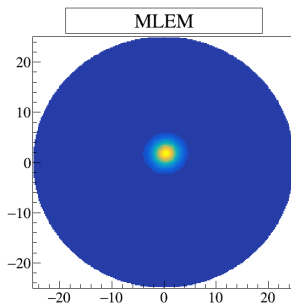
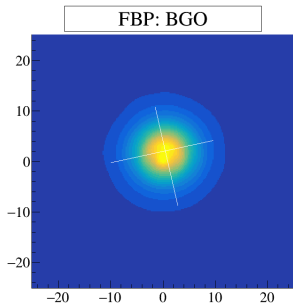
PET: LYSO-BGO



- 2018-06-17, run0
- MLEM (40) iterations, LYSO-BGO coincidences, twin source.
- 90 s/p
- Line: $(-9.88897, -0.264768) \rightarrow (9.52937, 4.10390)$



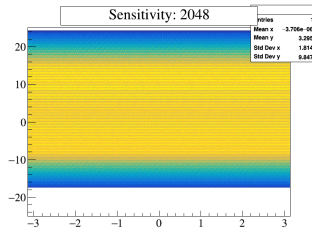
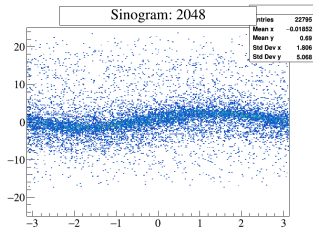
PET: BGO



- 2018-06-28, run0
- MLEM (40) iterations, BGO coincidences, twin source.
- 15 s/p
- Line: $(-9.88897, -0.264768) \rightarrow (9.52937, 4.10390)$



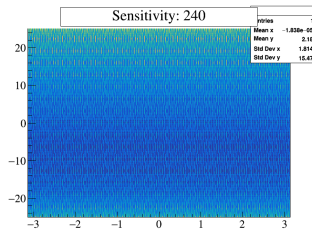
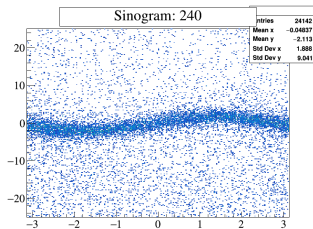
Sinogram: Si-LYSO



- 2018-06-28,1 + 2018-07-04,1 + 2018-07-05,0
- after collimator removal, 7500 events/12 h, 0.16 Hz, a few Hz expected.
- before 3300 events/24 h, 0.036 Hz
- MLEM (40) iterations, Si-LYSO coincidences, twin source.
- 90 s/p



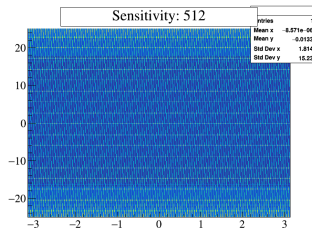
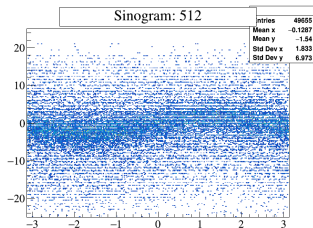
Sinogram: Si-BGO



- 2018-06-15, run0
- MLEM (40) iterations, Si-BGO coincidences, twin source.
- 120 s/p



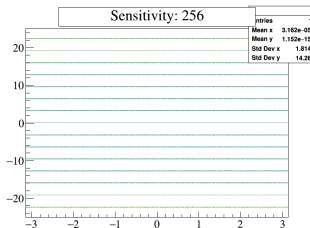
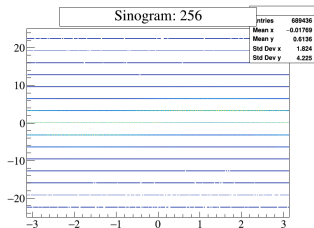
Sinogram: LYSO-BGO



- 2018-06-17, run0
- MLEM (40) iterations, LYSO-BGO coincidences, twin source.
- 90 s/p



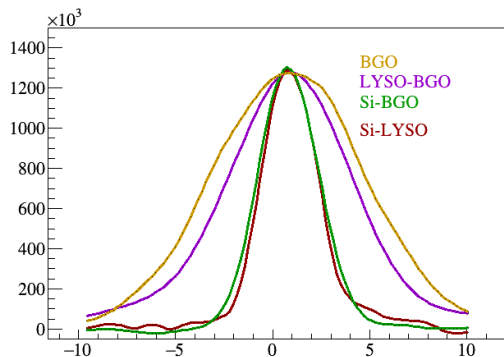
Sinogram: BGO



- 2018-06-28, run0
- MLEM (40) iterations, LYSO-BGO coincidences, twin source.
- 15 s/p



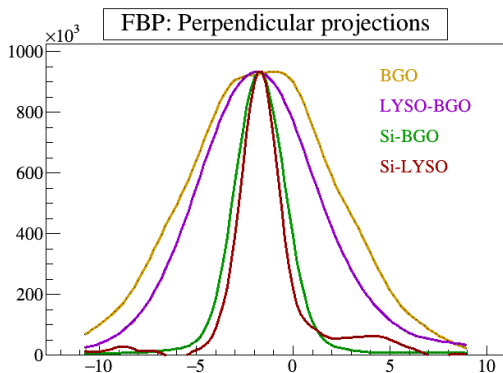
Projections @ FBP



- Projections along the line
- Si-LYSO is combined from three runs (2018-06-28, 2018-07-04, 2018-07-05)

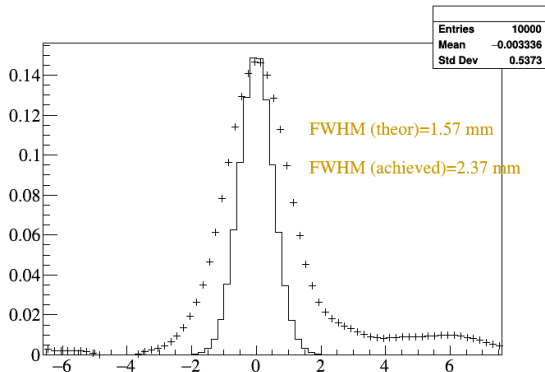


Perp. projections @ FBP



- Projections along the perpendicular line

Resolution



- Comparison to expectations.
- Theory is resolution perpendicular to LOR
- Achieved is resolution of the FBP. The latter is usually worse.
- Fair comparison in sinogram space -> lack of data!



Statistics

Data type	setting	dwell/pt (s)	counts
sibgo	w/ collimator	120	24 142
sibgo	no collimator	120	461 329
silyso	w/ collimator	180	3 316
silyso	no collimator	90	7 826

