Status report on reconstruction and MC simulation

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Overview

Activity performed up to now

- A new release of data reconstruction code has been created in order to test the new procedures for the reconstruction of KLOE-2 data developed from the various sub-groups.

- Data reconstruction tests for three bunches of runs corresponding to the data taking period of March, April and May (≈ 80 runs for a corresponding integrated luminosity of about 28 pb^{-1})
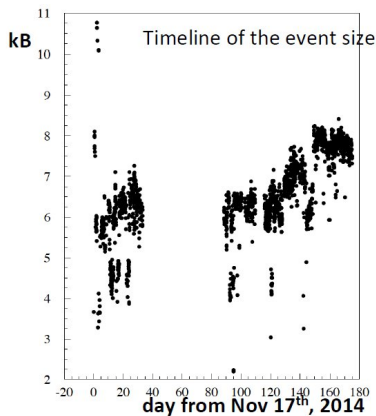
- MC production started.

Data Volume
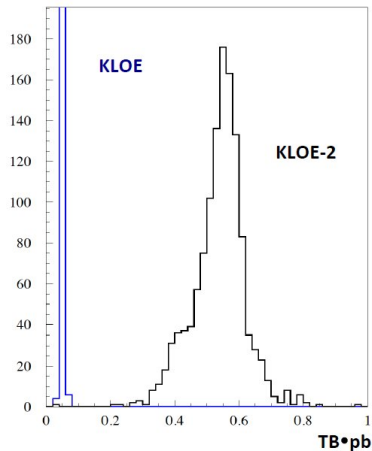
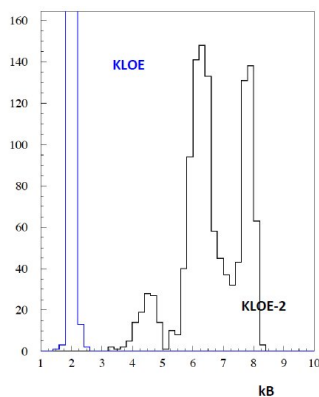46 TB (blue hist) in 2005,
peaks at 550 TB(black hist) in 2015.
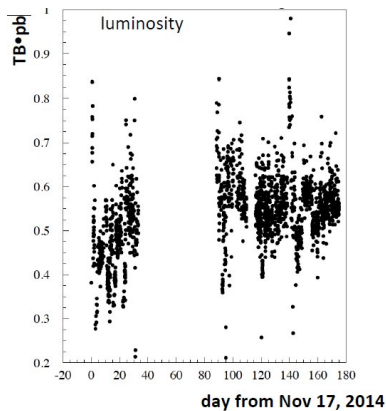
Timeline of the data volume normalized to the integrated luminosity
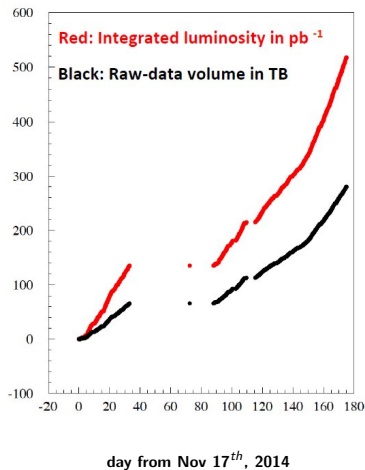
Data Volume

Timeline of the event size

Event size was 2.1 kB per events in 2005 8.1 kB in 2015

KLOE

KLOE-2

▶ **First black peak: old KLOE in 2014-15;**
▶ **Second: adding either QCALT or IT;**
▶ **Third: all KLOE-2.**

Data Volume

Red: Integrated luminosity in pb^{-1}
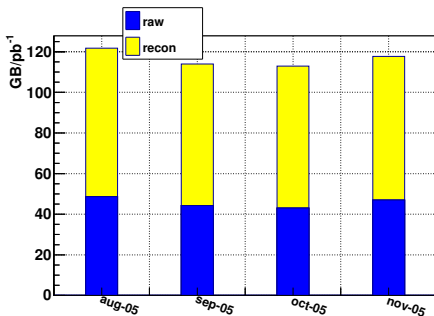
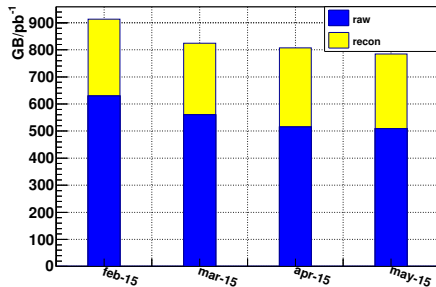Black: Raw-data volume in TB

day from Nov 17th, 2014

Integrated luminosity
acquired until
the beginning of May.
Now it increased of about
40%

Timeline of raw data volume and integrated luminosity growth
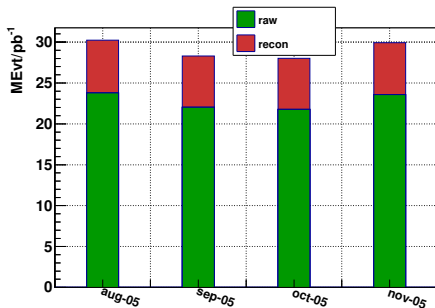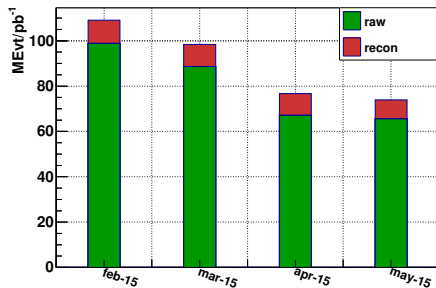
Acquisition and reconstruction volume

2005

Tests 2015

Acquisition and reconstruction volume

2005

Tests 2015

Specific data volume- Reconstructed data tests 2015

DAQ (Mevt/pb-1)	DAQ (GB/pb-1)	Reconstruction (Mevt/pb-1)	Reconstruction (GB/pb-1)
80	544	9.4	284

Stream	GB/pb-1	Mevt/pb-1
K⁺K⁻	0.65	0.024
K_sK_L	40.6	1.8
ρπ	5.9	0.24
Rad	31.7	1.4
UFO	154.3	3.6
Bhabha	48	2.1
LSB	1.6	0.16

Lumi=27.7pb$^-$1
(reconstructed in 1.7 days)

Current configuration of queues on the KLOE-2 farm cluster
(136 simultaneous process on fibm44-fibm50) allows to reconstruct
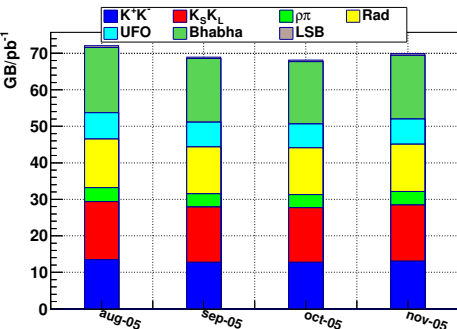≈16 pb$^-$1 per day.

Specific data volume- Reconstructed data 2005 (Aug-Nov)

DAQ (Mevt/pb-1)	DAQ (GB/pb-1)	Reconstruction (Mevt/pb-1)	Reconstruction (GB/pb-1)
22,55	45,03	6.3	70

Stream	GB/pb-1	Mevt/pb-1
K$^+$K$^-$	12.9	0.9
K$_s$K$_L$	15.2	1.1
ρπ	3.6	0.3
Rad	12.9	1.4
UFO	6.8	0.7
Bhabha	17.3	1.7
LSB	0.4	0.2

Lumi=586.6 pb^{-1}

Streaming data volume

2005
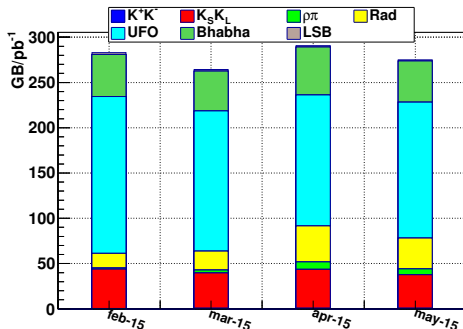
Tests 2015

The data reduction would decrease the UFO stream at the same level of 2005

MC production

MC simulation for the runs in the range 74001-76037 to tests the implementation of the new interaction region and to study the integrated luminosity.

The following MC card have been used:

- **rad04** mrc/mrn DST produced All ϕ radiative decay (and some continuum) with LSF=1.0

- **neu_kaon** mk0 DST produced Only $\phi- > K_S K_L$ with all $K_S(K_L)$ decay combination with LSF=0.1

- **gg04** mrc DST produced (BABAYAGA gg at $20°$ polar angle min)

- **golbha** mba DST produced without ECL filtering (BABAYAGA Bhabha scattering at $10°$ polar angle min) MC simulation for the reconstructed runs in the range 76019-76037:

- **all phys** mkc DST produced.

MC production Statistics

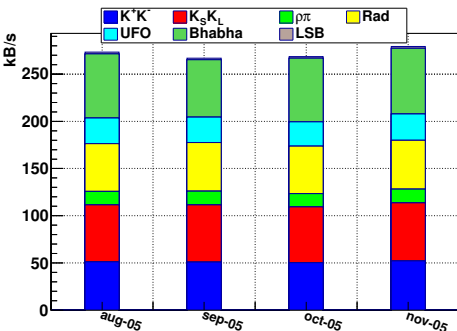| CARD	RUNS	INT LUM (pb^{-1})
goldbha	73	27.7
gg04	73	27.7
rad04	73	27.7
neu_kaon	73	27.7
all_phys	18	6.6
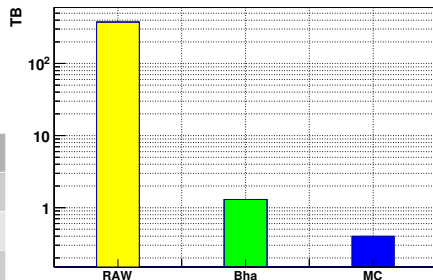
Tests 2015
Tapespace for raw data (370 TB),
Bhabha rec (1,3 TB)
and MC (0.4 TB)
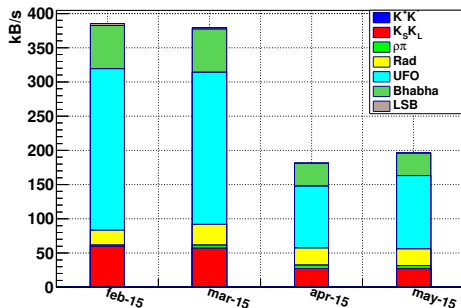
Conclusions and Outlook

- Data volume increased due to the presence of the new detectors and relatively high background.
- After the study on the data reduction and the release of IT tracking, the data reconstruction campaign must start.
- First tests of MC simulation have been successful.

SPARES

Specific Data Volume

2005

Tests 2015