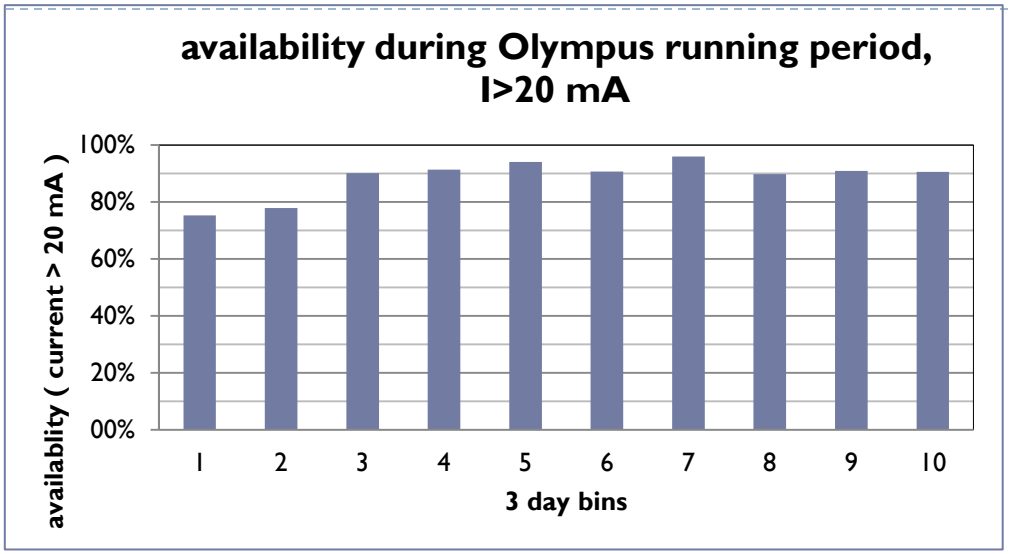
Olympus Run February 2012

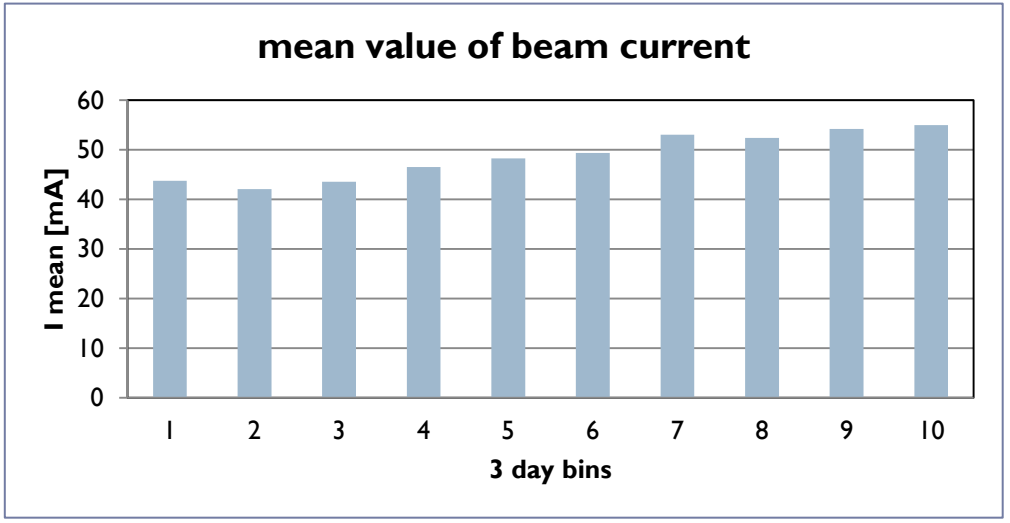
Olympus collaboration meeting, April 13th, F.Brinker

Overall perfomance

- After some days an over all availability of 90% could be reached, defined as

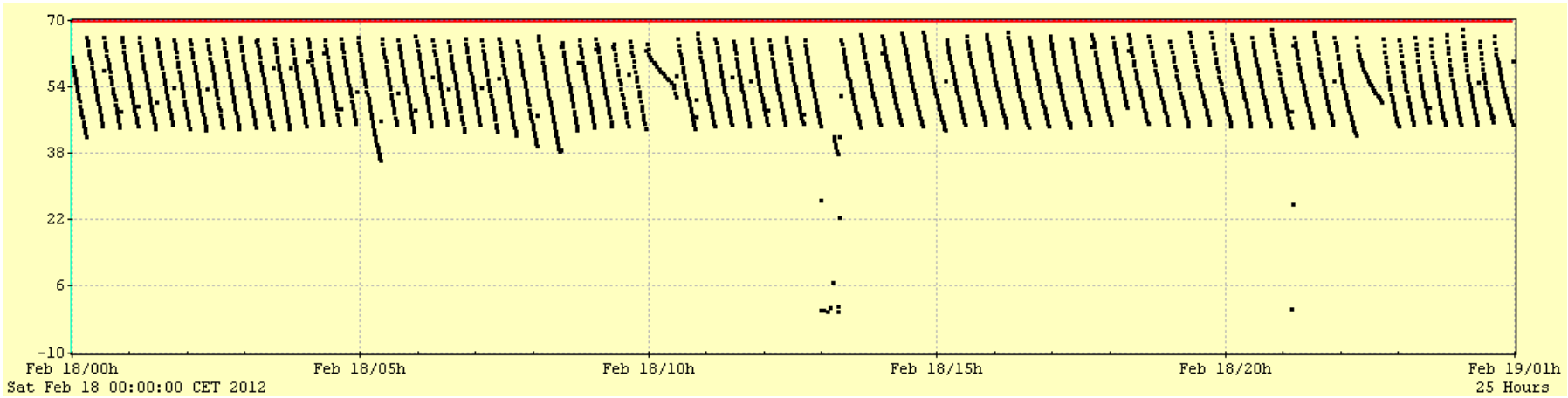
  current > 20 mA



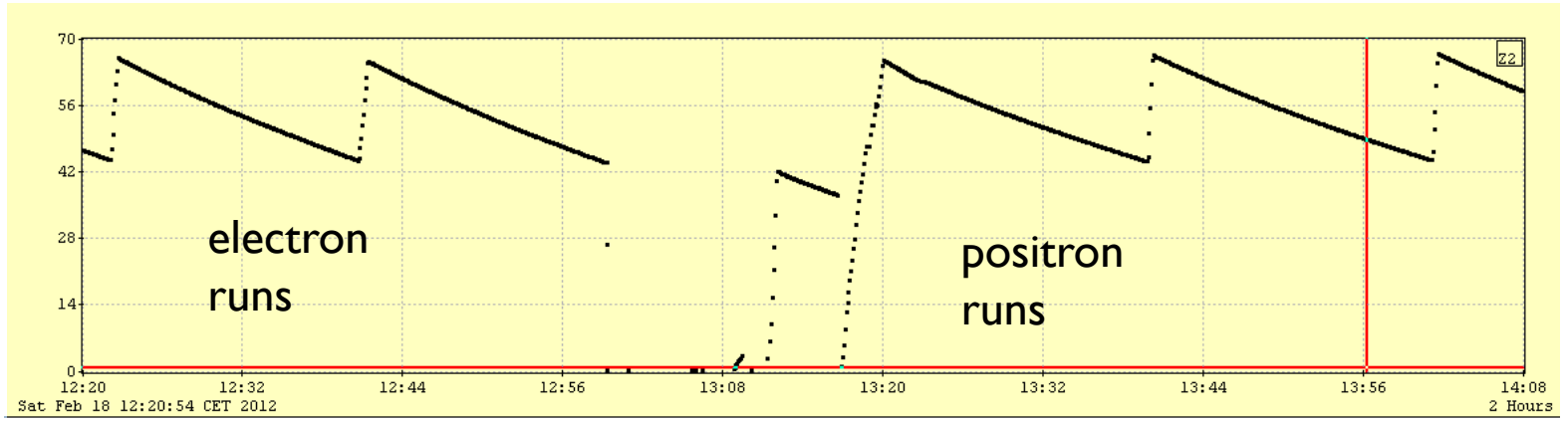


Overall perfomance

- *A „typical“ day with polarity switching at 1 PM and 2 low density runs*

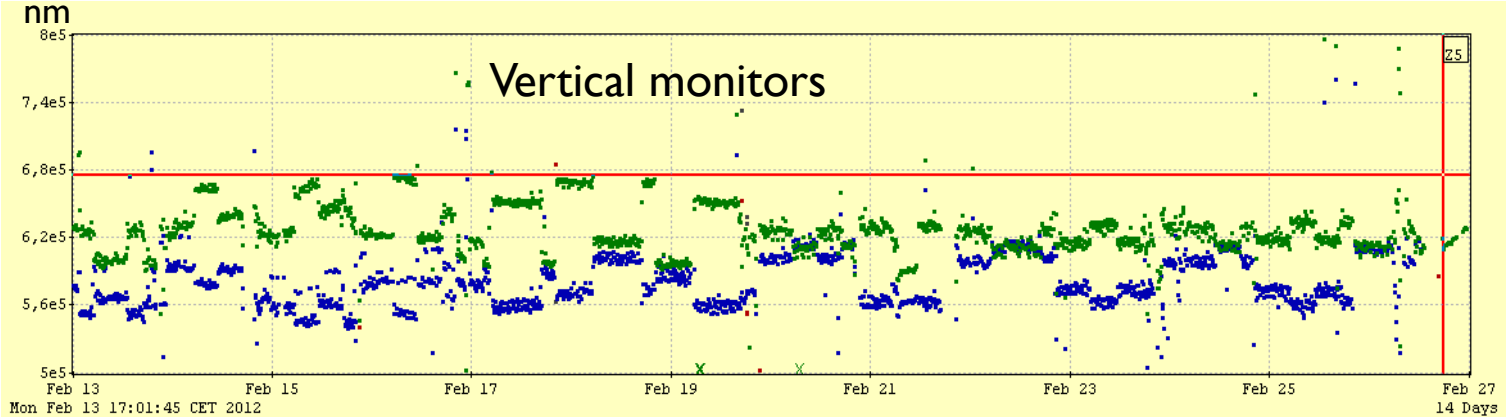


- *The switching took 13 mins. this day from „beam to beam“*



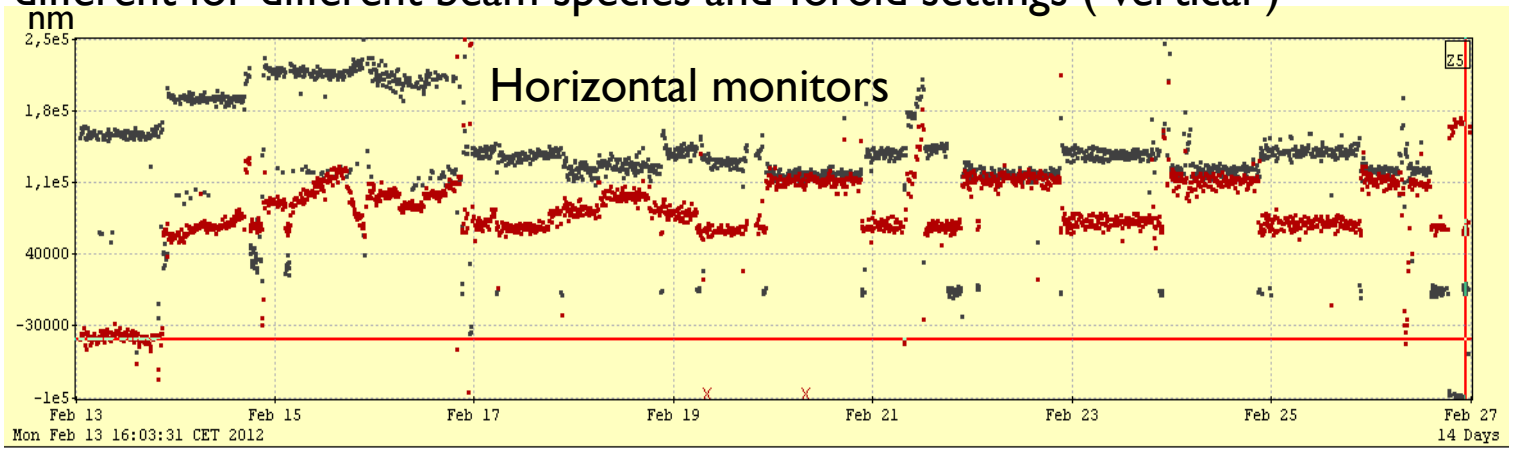
Beam stability

The beam positions were choosen empirically to optimize the background conditions



They could be stabilized by a slow orbit feedback to ±10 μm within a run and ±20 μm from run to run

They were different for different beam species and Toroid settings (vertical)



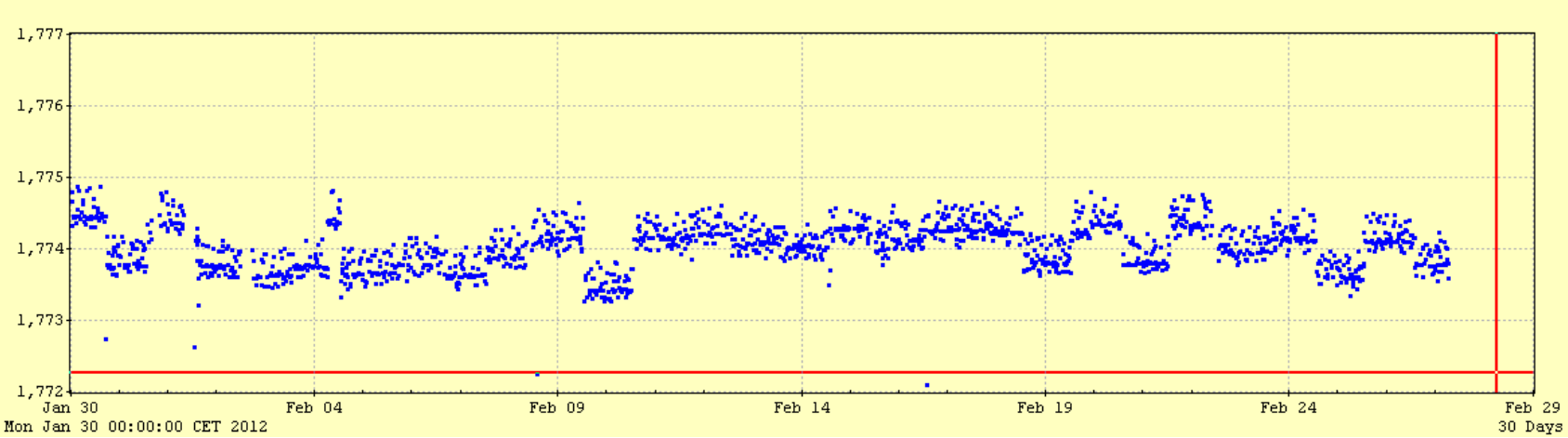
Beam energy

- To monitor the ***dipole field*** a rotating coil measurement has been installed in a reference dipole magnet which is in series connected to the DORIS dipoles. This measurement was extremely useful to establish a procedure to switch the polarity with reproducible dipole fields.
- The energy effect of the ***corrector magnets*** is calculated continuosly. This can be used to install a slow feedback to stabilize the energy.
- Vertical ***stray fields*** (earth field etc.) would shift the energy of e+/e- in opposite directions. They have been measured at typical points in all drift spaces and have been found to be in the order of 30 μT. This increases the energy for electrons/ decrease for positrons by about ***0.2*** ‰.
- The offical value for the vertical field at Hamburg is 46 μT, which would give a shift of about ***±0.3*** ‰
- All wiggler magnets were open during the running period – nevertheless they are a possible source for horizontal kicks. To avoid this uncertanty one could retract them from the ring before the next period.

Beam energy - dipoles

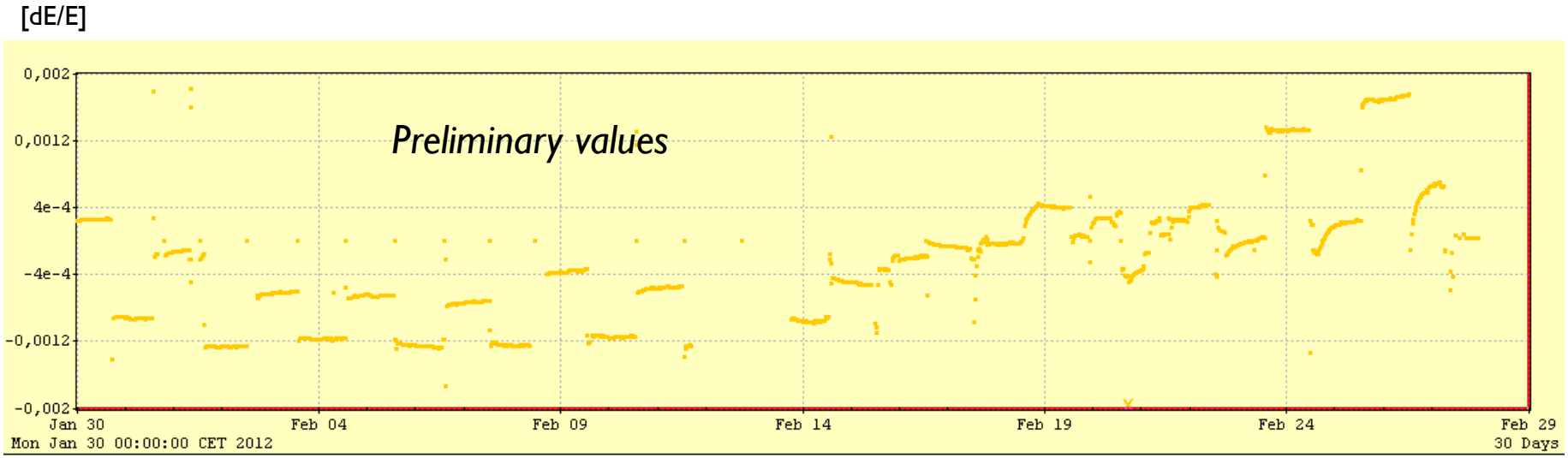
The Dipole field integral was constant within ± 0.5 ‰

[Tm]



Beam energy – corrector magnets

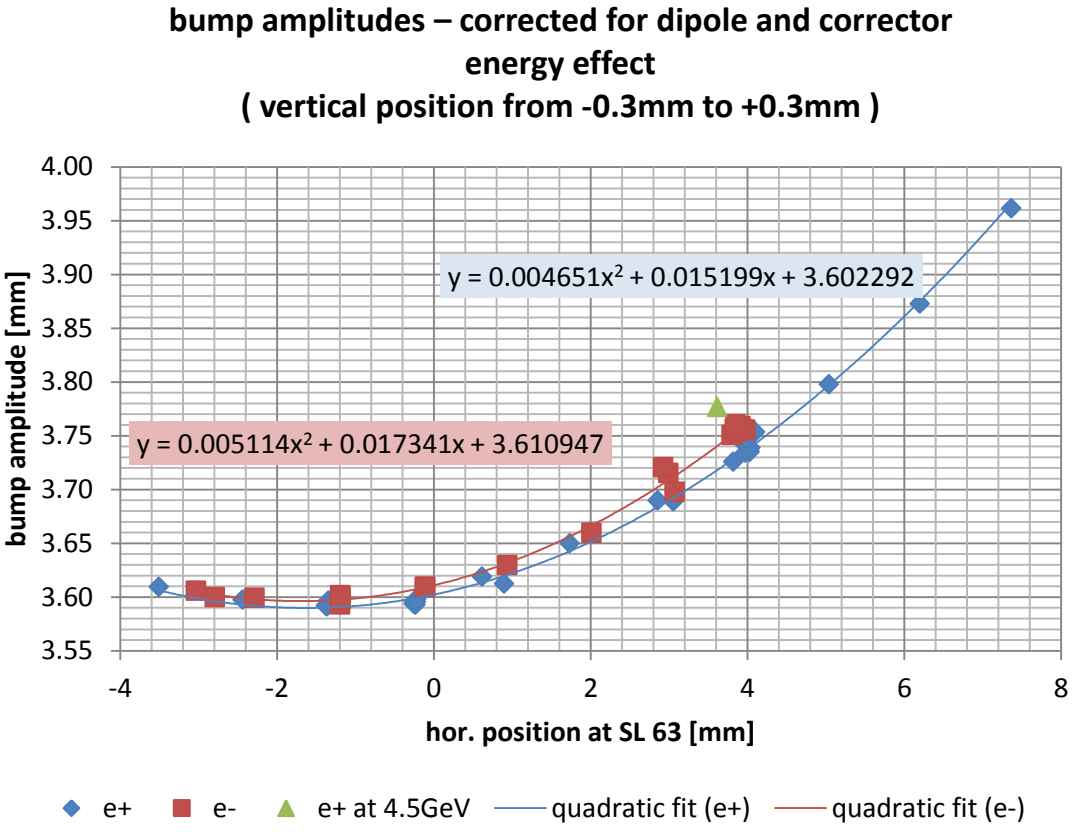
The total effect of the horizontal correctors was in the range of ± 1.5 ‰ and should be taken into account.
For the next period this effect can be compensated by a slow feedback.



Beam energy – measurement with bump

- To measure the energy a closed bump with 3 vertical steerers was used together with a Libera electronic to precisely measure the bump amplitude

- It figured out that the amplitude strongly depends on the horizontal orbit at the position of the bump
- This could only be investigated after the running period
- Further research is needed to get all relevant parameters under control
- The goal of a precision of ***1 ‰ is clearly challenging***



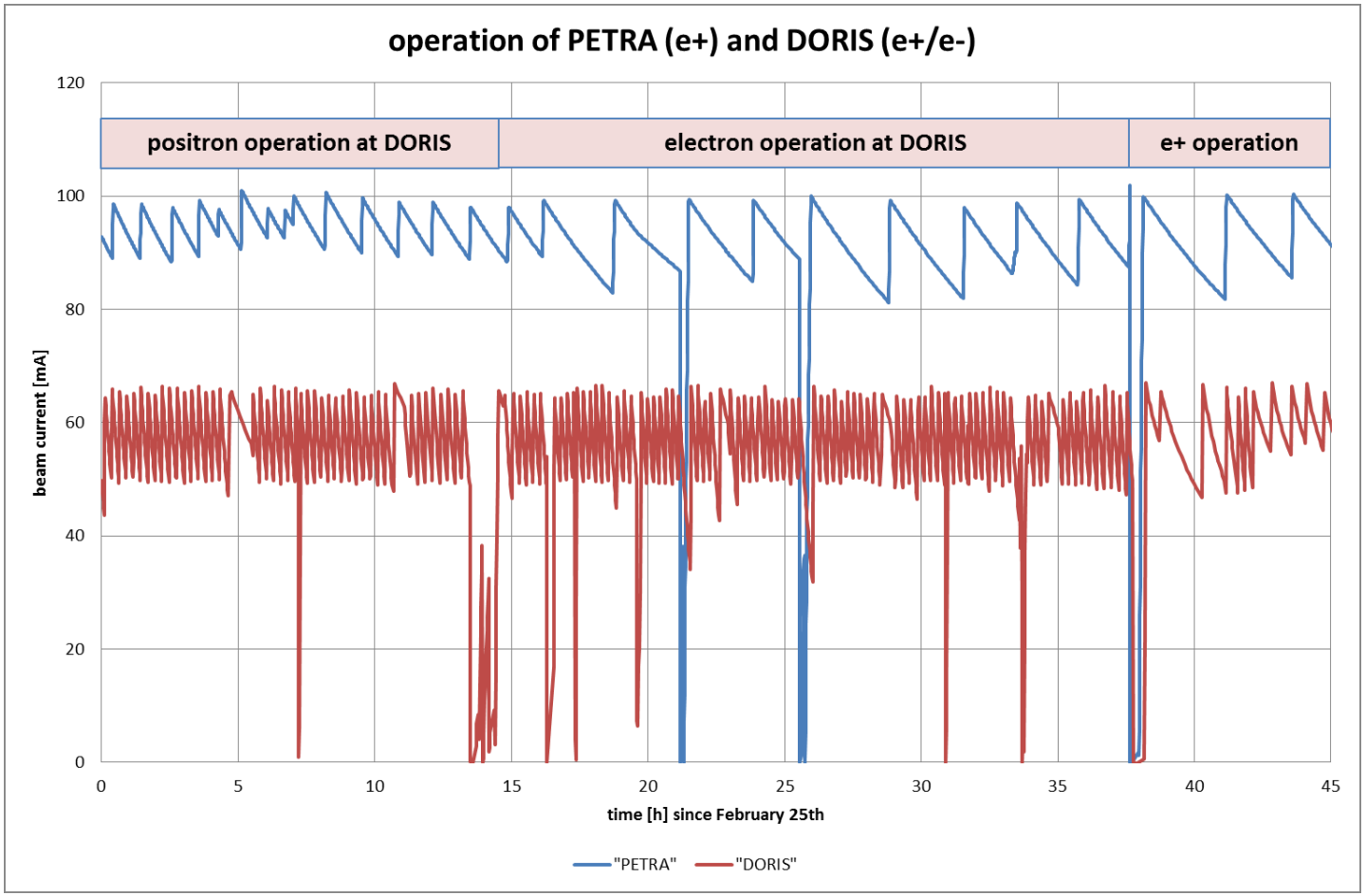
Operation together with PETRA

Due to the delay of the PETRA Upgrade, the PETRA operation will continue during Olympus running.

Petra operation started during the last days of the Olympus period in February

Linac and DESY can be switched within 5 min.

Therefore Petra can be refilled during one Olympus run.



Preparations for the second run period

- Prepare machine settings for alternative energies if this is an option
- Improve orbit correction to avoid energy drifts
- Improve energy checks with closed bump