# Minutes of RESULTS, PITZ Physics Seminar, 18.08.2016

Project: PITZ
Participants: F. Stephan, Q. Zhao, M. Krasilnikov, M. Gross, O. Lishilin, J. Good, Y. Chen, H. Qian, X. Li, G. Loisch

## 1) Agenda:

- **a.** Y. Chen: Studies of Charge Pulse Train
- **b.** AOB

## 2) Results:

- **a.** The studies were requested by FLASH. First measurement (A) done in July:
  - The charge decreases along the pulse train.
  - The charge is 28% (LOW.FC1) – 67% (LOW.ICT1) lower at the end of the pulse train.
  - A bump is noticeable in the beginning of the LOW.ICT1 (as well in HIGH.ICT1) pulse train signal readout.

  Further steps: check laser output flatness; check charge measurement devices, do charge measurements for selected pulses (##1, 10, 20, 50, .. , 500) at MMMG phase by adjusting the scope trigger position.
  On 15$^{th}$ and 16$^{th}$ of Aug Q-train measurements were repeated for $P_{gun}$=6 MW, LT=15% (B) & for $P_{gun}$=6.5, LT=50% (C, not finished); the pulse train is more flat now (checked at the PMT on the laser trolley):
  - RF was flat
  - Laser pulse train was more flat then in July
  - LOW.ICT1 measures 4% more charge compared to LOW.FC2
  - The bump on the ICT measurements moves with the scope trigger position
  - Charge measurement behaviour along the pulse train is different for ICT1 and FC1
  - Maximum extractable charge increases with the pulse number for the measurement B and decreases for the measurement C

  MK: we should establish a standard window width for the scope measurements.
  **Further steps:** finish phase scan for the measurement C, do measurements for different LT, Pz scans, do LT scan and use the linear part (try transition and saturated regions as well), do single laser pulse scan within the RF pulse.
- **b.** Message regarding OSS from MG: the splicing is done in Hamburg, to be checked asap (few hours needed)
- **c.** MK: use a laser pulse train and an RF-phase slope along the train to measure the laser profile. Will work only with a low charge and no space charge -> big BSA needed

**d.** A questionnaire was send around about a one-week seminar devoted to the improvements on PITZ operation – please make your mind and proposes topics!
**e.** MK: problems with HEDA1 scan: energy spread looks not good; OMA probably wrongly defines mean momentum – image processing and calculation algorithms should be checked
**f.** Register for the open doors day and mark that you are part of PITZ
**g.** Accelerator ideas market: another reminder
**h.** Tell Holger about your participation in XFEL shifts

| **What is to be done?** | **By whom?** | **Until when?** | **Done on** |
|---|---|---|---|
| Compare noise levels of LOW.FC1&2, find optimal scope settings for the charge measurements, check the crosstalk of the ICTs and the scope trigger | X. Li | | |
| Continue Q-train charge studies | Y. Chen | | |
| Check the OSS status | M. Gross | End of the day | |
| Think about the 1-week PITZ improvements seminar next year | All | | |
| Check OMA | H. Huck | | |
| Tell HH (NON-!?)availability for XFEL shifts | All | | |
| Topics for Ideenmarkt to be prepared | All, YC, GL | | |
| Register for the open doors day | All | | |

Protocol prepared by
O. Lishilin on 2016.08.18