Minutes of RESULTS, PITZ Physics Seminar, 2017-02-09

Project: PITZ
Participants: M. Krasilnikov, F. Stephan, J. Good, Y. Chen, H. Huck, O. Lishilin, Y. Renier, M. Gross, G. Asova, A. Oppelt, H. Qian, X. Li, P. Boonpornprasert.

1) Agenda:

a) AOB
b) Solenoid BBA and laser grid experiments @ XFEL by M. Krasilnikov
c) Coaxial coupler asymmetry induced RF kick for the E-XFEL Injector at PITZ by Y. Chen
d) SINBAD tech. Meeting via video connection (in German)

2) Results:

a) AOB:

i. Currently there is a low value for us to participate XFEL shift, but we are warmly welcome and there could be measurements which are interesting for us. We should stay in touch with XFEL run coordinators and organize it more flexible. We should make proposals on what to do and send them to the run coordinators. For example, the emittance optimization is still the issue for them.
ii. Summer student topics to be discussed next PPS

b) Final Solenoid BBA at 2016-12-23. MK implemented static (earth) magnetic field in his program. A beam-based experiment to study coupler kick on 2016-12-12..14. Phase scans are done for every point at VC. Displacement trajectories while the phasescan were recorded – they all coincide at one "focusing" phase. Coupler kick is seen at different gun phases. MK tried to simulate magnetic field in ASTRA by putting the gun inside a dipole. Charge extraction curve does not really fit, as well as beam position. MK is playing with the dipole magnetic field right now. BPM offset has to be put into consideration.

c) We need to analyse fields around coupler region more thoroughly (that is what Ye does): zero-crossing of the field is not symmetric in the coupler. H11 mode disturbs TEM mode pattern in coupler. Dipole kick dumps very fast inside the full cell. Ye did single electron tracking in 3D EM field without solenoid and earth magnetic field similar to laser grid study. The kick is seen from 0.12 to 0.24 m. The head and the tail see different (0.3 mrad) kicks. The kick amplitude is about 2.35 mrad for PITZ case. The kick is simulated against the gun phase. The kick momentum is linear proportional to the beam position on the cathode. The kick is split to a dipole and a quadrupole (normal and skew) components.

What is to be done?	By whom?	Until when?	Done on
We should be included in mailing lists for XFEL schedule, run program, current	Frank	Next week	

coordinator, etc.			

Protocol prepared by
O. Lishilin