# PPS on Friday, 8th of September

Attendants:

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**Topics**

1. Open day organization (AO)
2. Summary Accelerator market of ideas (FS)
3. Beam imperfections (QZ)
4. AOB (FS)
5. Run coordination

**Results**

1. Open day
    a. *Tours should be accompanied by a second person (kitchen presence) who carries the readable dosimeter and makes sure that nobody is lost*
    b. *Tomorrow (Friday) tunnel will be prepared*
    c. *Klystron hall will not be entered (possible but not planned, in case: no photos)*
    d. *Supporters shall write down their working hours for payment (normal shift plans..)*

2. Market of ideas
    a. Transverse diagnostics of very low charge beams (REGAE)
        i. Used LYSO screens emit a lot of light to the sides
        ii. Projection-like image of the beam can be seen from the side (0.1fC diagnosed)
        iii. Could be used as a sensor for arrival time jitter diagnostics
    b. THz accelerator cavity
    c. Transverse gradient undulators
        i. High energy spread in plasma accelerated beams
        ii. Match fields to these conditions to reach SASE
    d. PETRA IV
    e. Developing an online tunable plasma cell
        i. Gas is ionized by two laser pulses which are crossed
        ii. Field ionization lasers
        iii. Tuning the delay and the angle can create all kinds of shapes
    f. DC electron beams from a RF-gun
        i. Delayed to a dedicated meeting with astrophysics group
    g. CW operation of FLASH (Vogel)

        i. Significant upgrades and changes in the RF-setup would be needed to get from 0.8% to 2.2% / 10% duty
        ii. Besides all investigated high duty guns, an option would be to switch on and off RF in a PITZ-like gun with beam repetition rate → case study with two klystrons @ 2kHz, low filling time; phase modulation for fast RF damping in the gun; quick phase shifter needed for changing between klystrons; He or Ne cooled gun with increased Q could be operated with one klystron
    h. Two stages laser-beam driven plasma wakefield accelerator (de la Ossa)
        i. Laser driven beam creation
        ii. First beam used as a driver in a second beam driven stage
    i. Less average power in a gun (Huening)
        i. RF compression to have fast RF-spikes instead of a long pulse
        ii. Tailored waveguide and phase modulation for pulseshaping
        iii. OR "storage" cavities with individual klystrons to switch/interfere RF between these and the actual gun cavity
        iv. Physical extensions would be huge
3. Beam imperfections with rotated quad fields
    a. Reminder: Observed asymmetries could be caused by quadrupole field
    b. Assumption skew quad field from coupler
    c. Laser position on cathode could be scanned to get quad strength (was done already)
    d. Source for asymmetries could not be identified so far
    e. Rotated + normal quadrupole field don't match to experiments
    f. Further studies to be done
    g. Experiments on a corrector (quadrupole/octupole wires) should be prepared soon

4. AOB
    a. Fast gun recovery should be prepared for standard operation at PITZ to show applicability to FLASH
    b. When people leave the group take care of all used resources that they are distributed back to the according groups
    c. Huettenseminar: suggest topics for talks
5. Run coordination
    a. Plan uploaded

**<u>To do</u>**

1. Preparation of tunnel for open day (FS, HQ, JG, II, GL, MG,..)
2. Preparation of quad field compensation frame (MK, QZ, HQ)

Protokoll G. Loisch