

PITZ Run coordination meeting.

M. Krasilnikov
13.08.2015

Plan for weeks 33-34

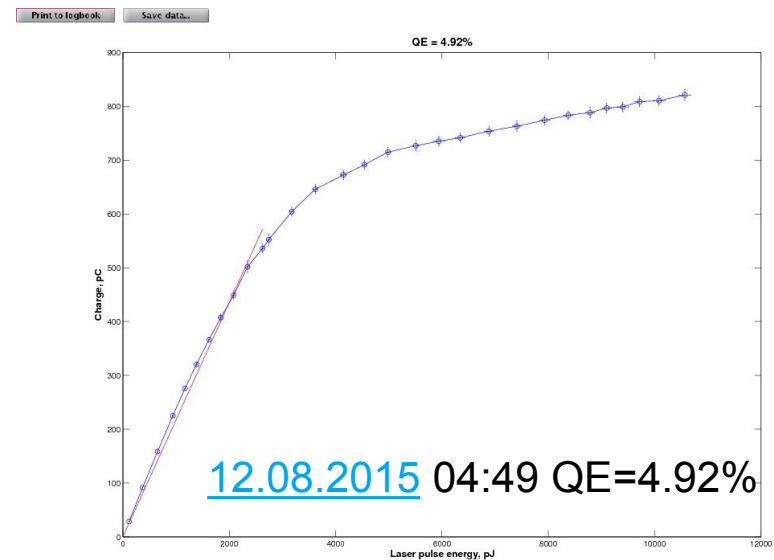
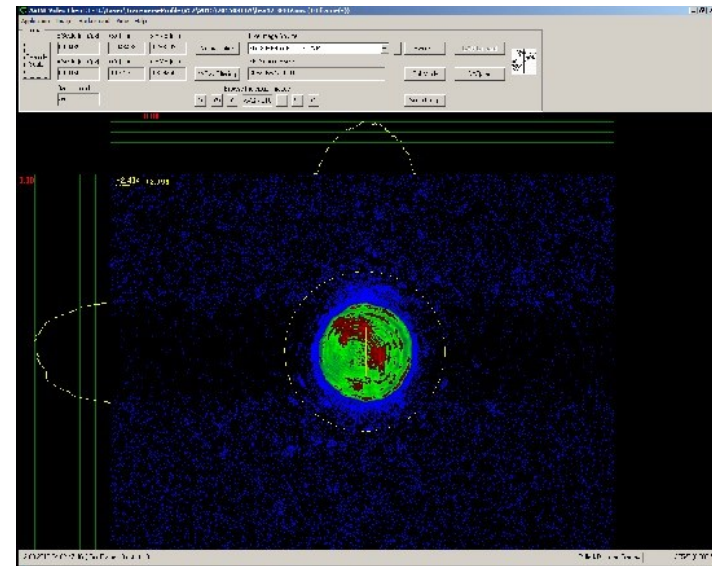
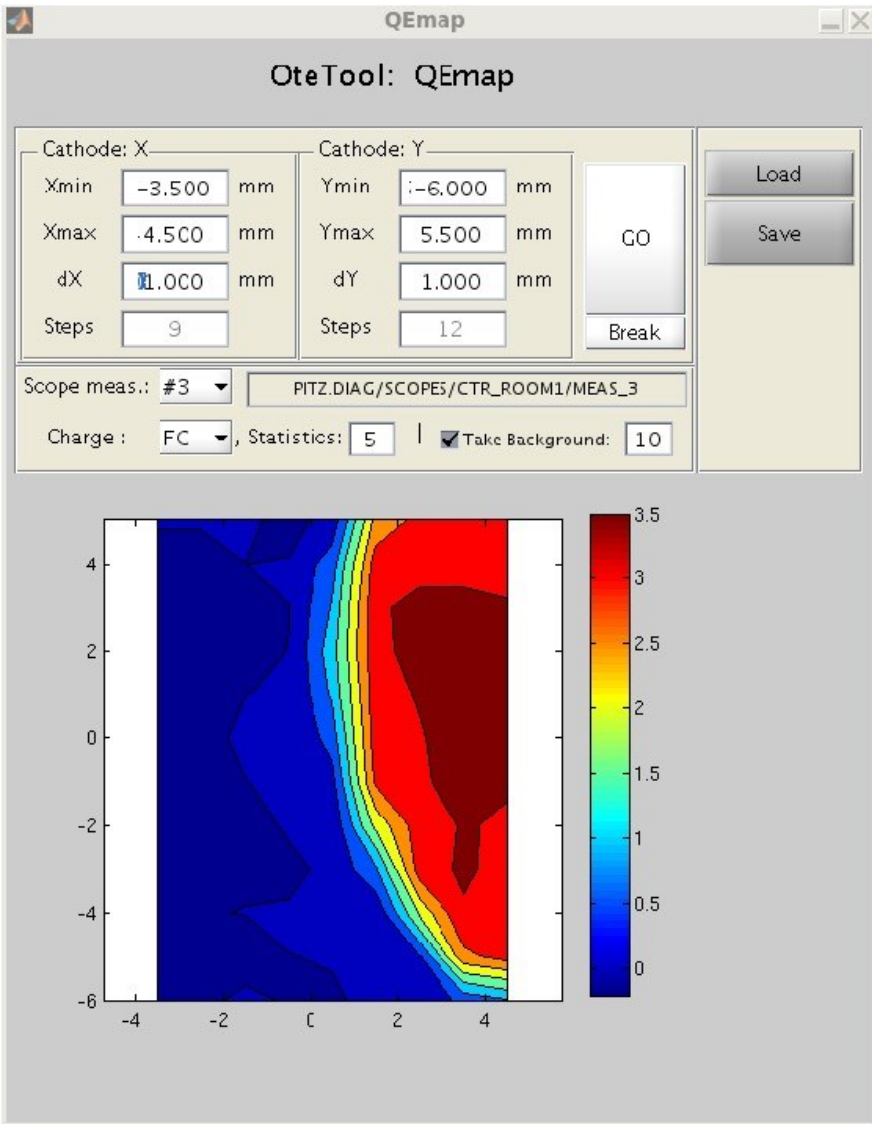
- Transverse deflecting system (**TDS**) studies (detailed program – H.Huck)
- Longitudinal space charge (**LSC**) studies (detailed program Lu Pengnan) – 12-14.08
- E-beam **Imaging** → RF+Solenoid dynamics w/o space charge (3 and 5MWg) (Q.Zhao + sum.student)
- **Emittance** measurements (GV, MK) – 500pC?
- In parallel (if time):
 - QE-, QE-map measurements
 - ?BPMs studies – noise investigations (MK, F.Tonisch)
 - RF coupler kick studies (Igl, MK)
 - ?Gun stability measurements
 - ?Further works on 3D-Ellipsoidal laser system

Week	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Week	Mon	Tue	Wed	Thu	Fri	Sat	Sun
33	Aug-10	Aug-11	Aug-12	Aug-13	Aug-14	Aug-15	Aug-16	34	Aug-17	Aug-18	Aug-19	Aug-20	Aug-21	Aug-22	Aug-23
Morn. 7:00 to 15:30	Huck Lishilin	Huck Isaev	Huck Lishilin	LSC program Vashchenko Isaev		Vashchenko Kalantaryan	Vashchenko Rybakov	Morn. 7:00 to 15:30	Boonpompras Zhao	Boonpompras Zhao	Rublack Loisch	Rublack Loisch	Krasilnikov Pathak	Krasilnikov Pathak	Krasilnikov Pathak
Late 15:00 to 23:30	TDS program			TDS program		Emittance		Late 15:00 to 23:30	Imaging Asova Krasilnikov	Asova Krasilnikov	Huck Zhao	Huck Zhao	Good Zhao	Rublack Isaev	Rublack Isaev
Night 23:00 to 7:30	TDS program		LSC program			TDS program		Night 23:00 to 7:30	Vashchenko Pathak	Vashchenko Pathak	Asova Lishilin	Asova Lishilin	Asova Lishilin	Renier Zhao	Renier Zhao

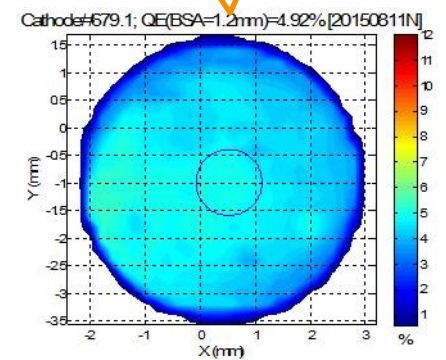
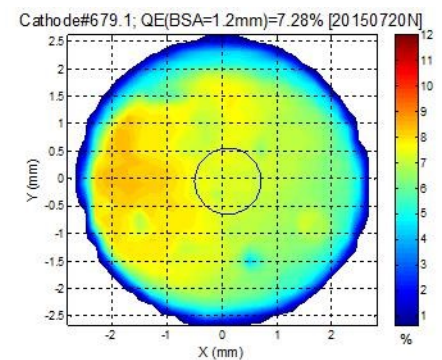
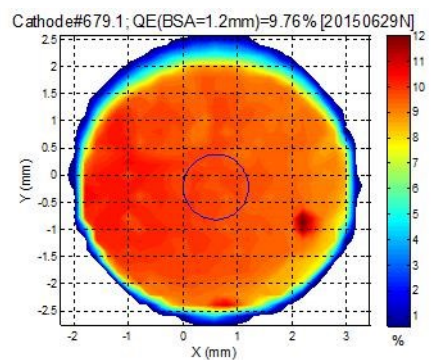
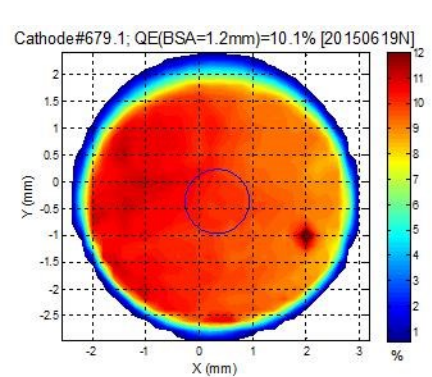
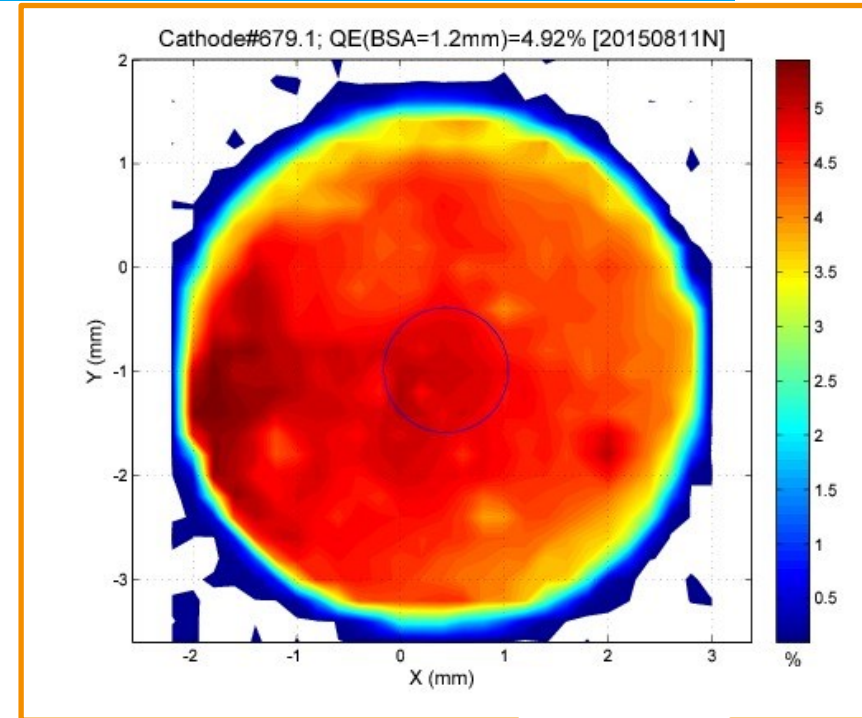
- Bucking solenoid PS failure → not solved
- Timing machine failure → solved? (scope, cameras, etc)
- TDS: solenoid PS failure - solved
- Cathode laser PTO misaligned (climat.machine failure?) - solved

Cathode laser and cathode QE

vacuum mirror scan - 11.08.2015 06:54

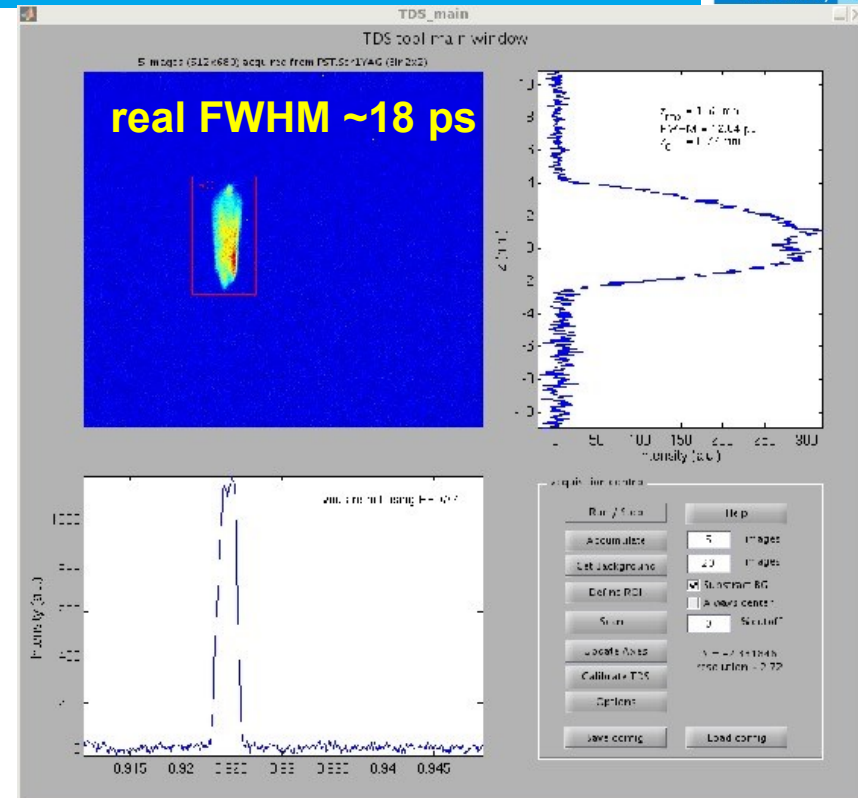


Cathode #679.1 QE-map



TDS plans for week 33/34 (H.Huck + B.Beutner)

- Investigate profile discrepancies
 - Background subtraction
 - Focusing, esp. Solenoid
 - Laser pulse length (?)
 - Tomography (?)
- Refine matlab tools
 - Statistics
 - Auto-MOI
 - Bolko Beutner will visit us and bring his own tool (also Minjie Yan) → **updated** (e.g. using noise-cut functions)
- HEDA2 + TDS
 - Optimize focusing for higher resolution(s)
- First slice emittance measurements (quad-scan)
 - For online evaluation, some coding needs to be done...



TDS timing setting for centering just 1 bunch: 1620680

Longitudinal Space Charge studies (+P. Lu)

I. For a fixed longitudinal laser pulse shape* and for a fixed electron beam momentum of 21 MeV/c

1. For a various electron **beam charge of [100, 250, 500, 1000] pC**.
 - a. HEDA1 booster phase scan (<PZ> and PZrms, electron beam pulse length)
 - b. HEDA2 booster phase scan (<PZ> and PZrms, electron beam pulse length)
 - c. TDS
 - d. Screen pictures between HEDA1and HEDA2

Bunch charge	BSA size
100 pC	0.8 mm
250 pC	1.0 mm
500 pC	1.2 mm
1 nC	1.6 mm

Total time to make I.1: 4x1.5h = **6h**

II. For a fixed electron beam charge of 1nC/200pC and for a fixed electron beam momentum of 21 MeV/c

1. For a **various solenoid focusing/laser size, (initial transverse phase space)**
 - a. HEDA1 booster phase scan (<PZ> and PZrms, electron beam pulse length)
 - b. HEDA2 booster phase scan (<PZ> and PZrms, electron beam pulse length)
 - c. TDS
 - d. Screen pictures between HEDA1and HEDA2

Total time to make II.1: 4x1.5h = **6h**

Optional-1: For a fixed longitudinal laser pulse shape* and for a fixed electron beam charge of 1nC, For a various electron **beam momentum of [21, 18, 15] MeV/c**

- a. HEDA1 booster phase scan (<PZ> and PZrms, electron beam pulse length)
- b. HEDA2 booster phase scan (<PZ> and PZrms, electron beam pulse length)
- c. TDS
- d. Screen pictures between HEDA1and HEDA2

Total time to make 1: 3x1.5h = **4.5h**

Optional-2: 1nC, 21 MeV/C, choose laser pulse length and size, distribution, and solenoid on site, measurement :

1. Emittance at EMSY2
2. Emittance at EMSY3

Total time to make: **6h**

Long Space Charge needs very good steering through the quads

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