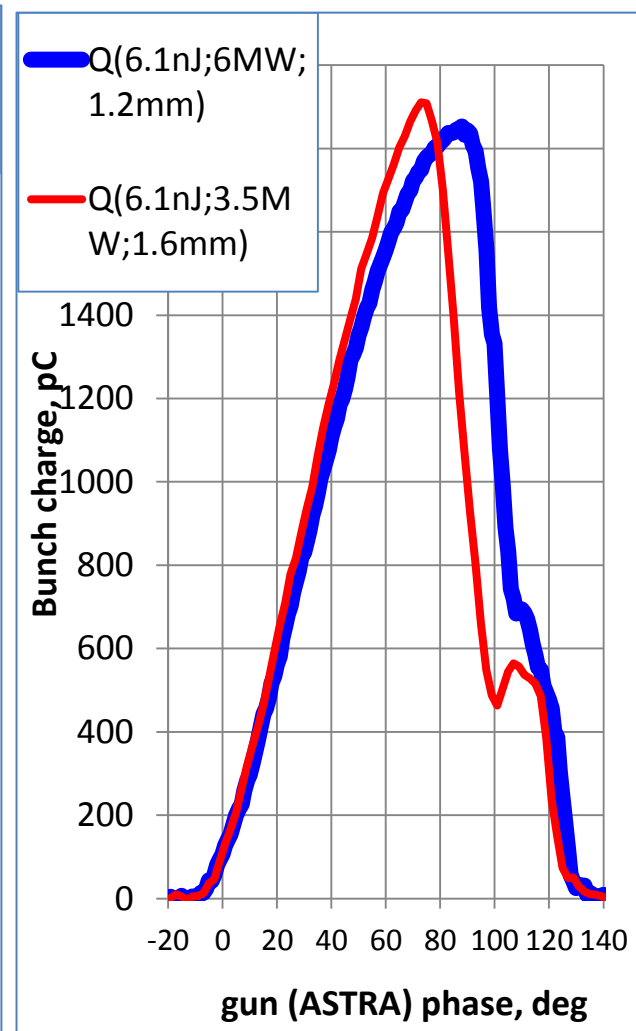
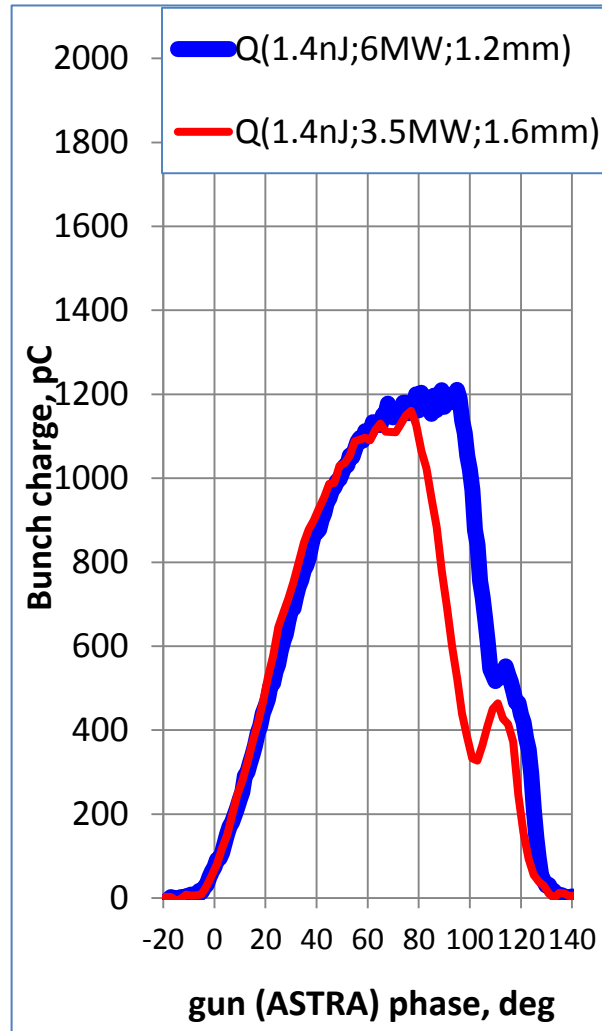
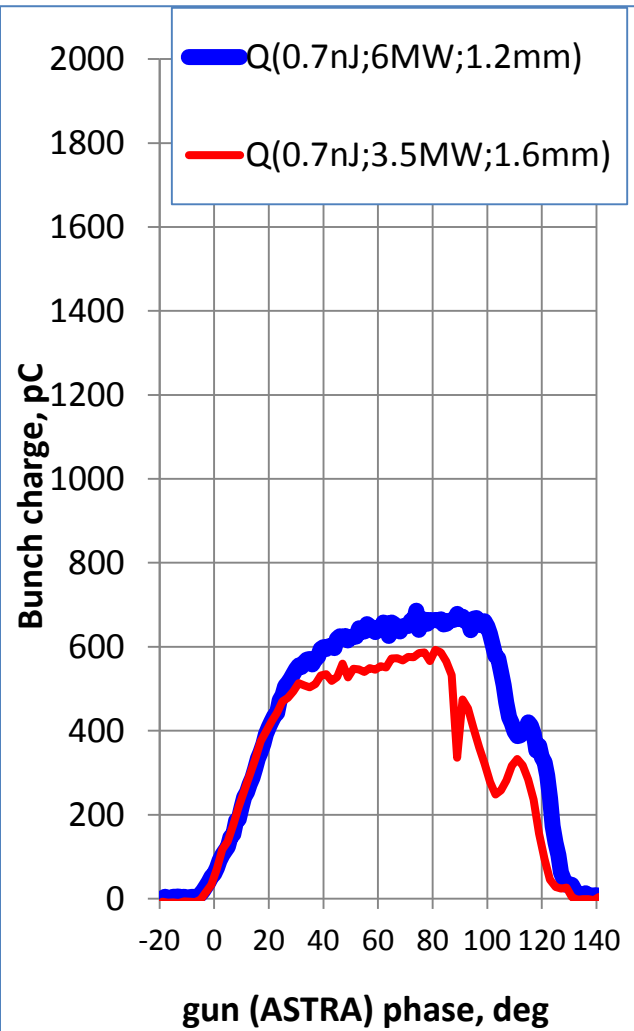


Emission Studies  
using flat-top laser temporal profile  
03.02-04.02.2012  
+ upgrade from 13.03.2012

*M.Krasilnikov, PPS 22.03.2012*

# Looking for a parameterization (3-4.02.2012)



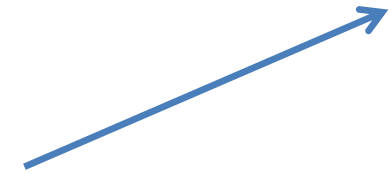
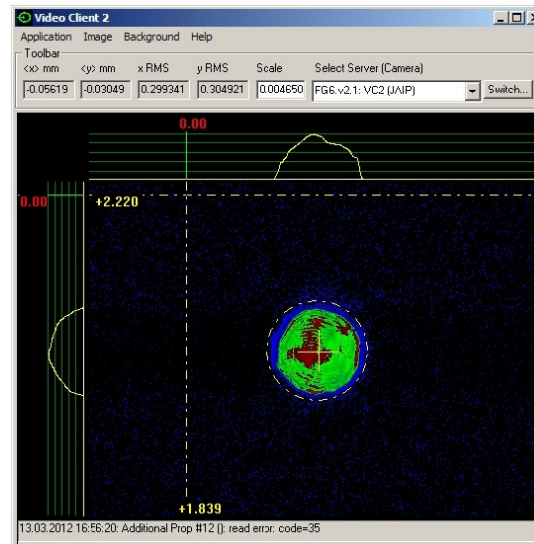
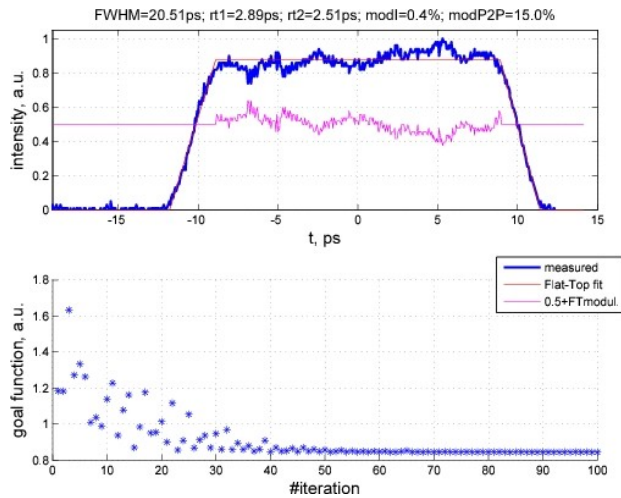
√      √      √

√

Ecath	Xrms(VC2)	Yrms(VC2)	invE
61.9	0.314	0.308	19.3
48.35	0.41	0.394	19.4

# New measurements from 13.03.2012A

Meas #	RMS BSA goal	P_gun	RMS_X	RMS_Y	RMS_XY	LT	LEeff != LT*(RMS_BSA)^2 =	5.18	<b>IQ^2</b>
	mm	MW	mm	mm	mm	%			
1	<b>0.300</b>	<b>6.49</b>	<b>0.299</b>	<b>0.305</b>	0.302	57.5	<b>DONE</b>	5.24	<b>0.592</b>
2	0.313	5.99	0.313	0.312	0.312	53.1	DONE + 0-cross	5.17	<b>0.584</b>
3	0.328	5.45	0.328	0.326	0.327	48.3	DONE	5.16	<b>0.583</b>
4	0.342	5.00	0.340	0.342	0.341	44.3	DONE	5.14	<b>0.580</b>
5	0.359	4.55	0.362	0.360	0.361	40.3	DONE	5.26	<b>0.593</b>
6	0.383	3.99	0.381	0.382	0.382	35.3		5.15	<b>0.581</b>



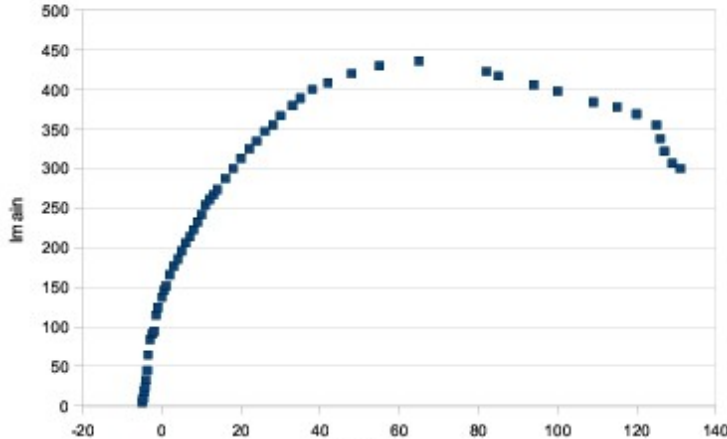
0.585±0.97%

NB: the laser e-meter was not in operation → the LT was tuned assuming linear dependence

# I main tuning

SP phase Imain

- 5
- 10
- 19
- 24
- 33
- 45
- 85
- 84
- 91
- 95
- 115
- 125
- 136
- 146
- 152
- 166
- 177
- 186
- 196
- 206
- 214
- 223
- 233
- 242
- 254

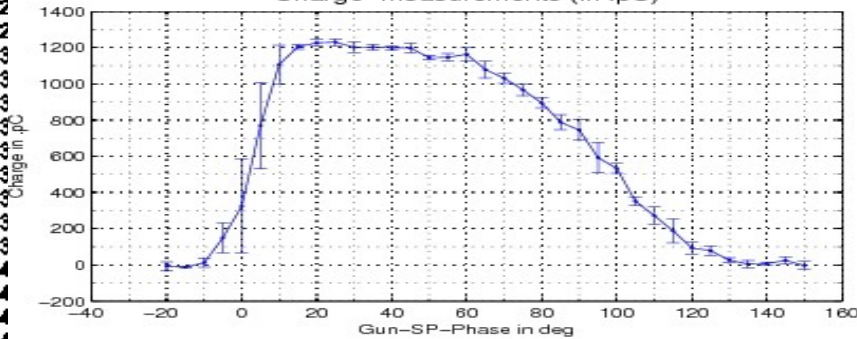


Measurement with Device -> low ICT\_1  
 Magnet-current = 429.5353 A, Laser-transmission = 57 %

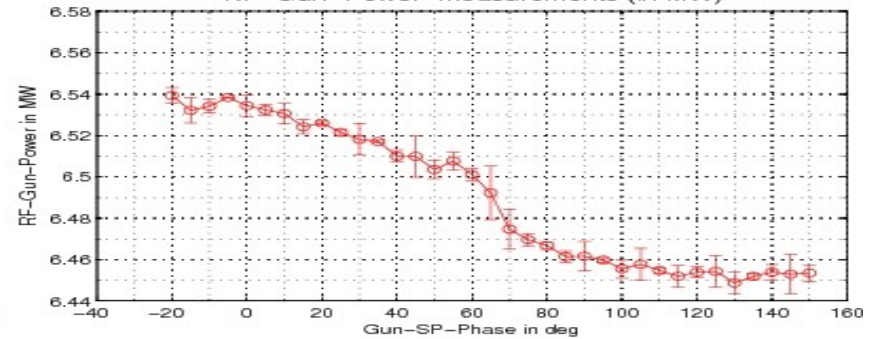
Phaseplot\_13-Mar-2012\_Tue\_18-50-60

Line-Slope = [pC/deg]  
 Line-Offset = [pC]

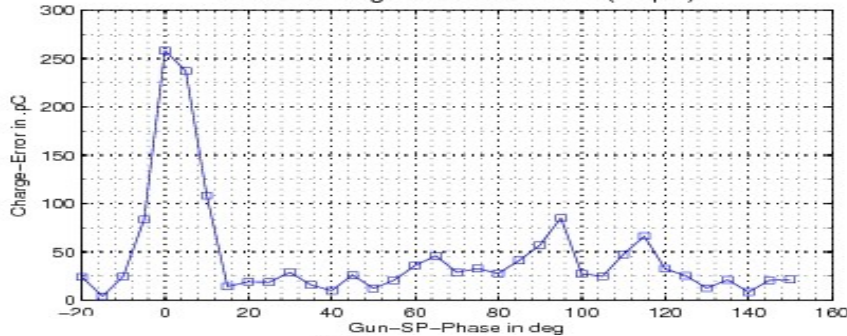
Charge-measurements (in .pC)



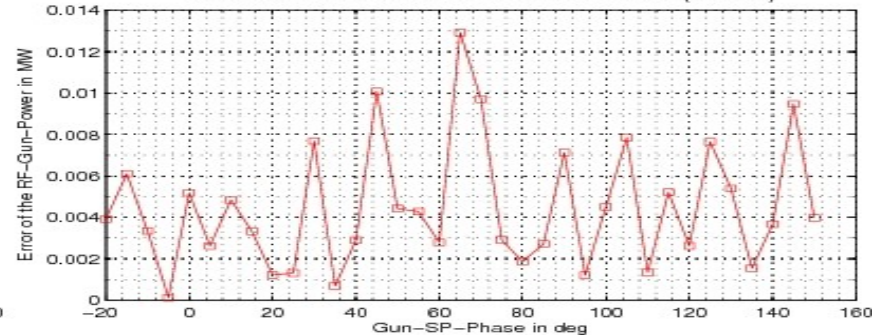
RF-Gun-Power-measurements (in MW)



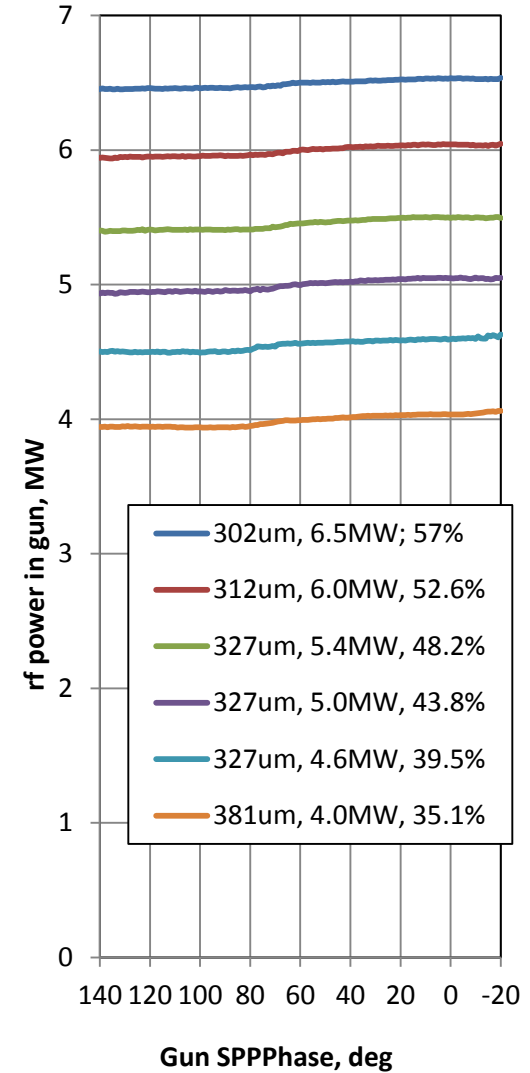
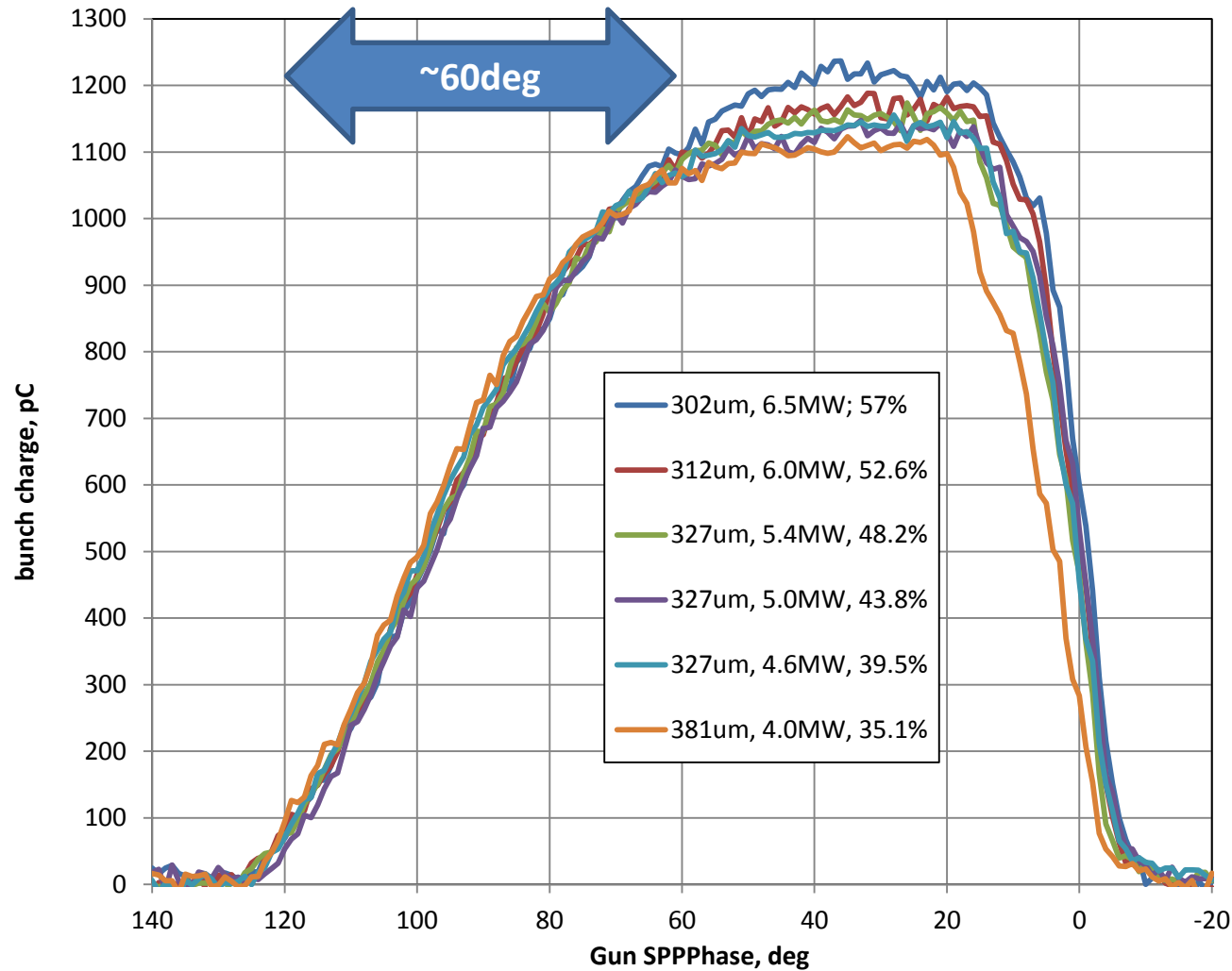
Error of charge-measurements (in .pC)



Error of RF-Gun-Power Measurements (in MW)

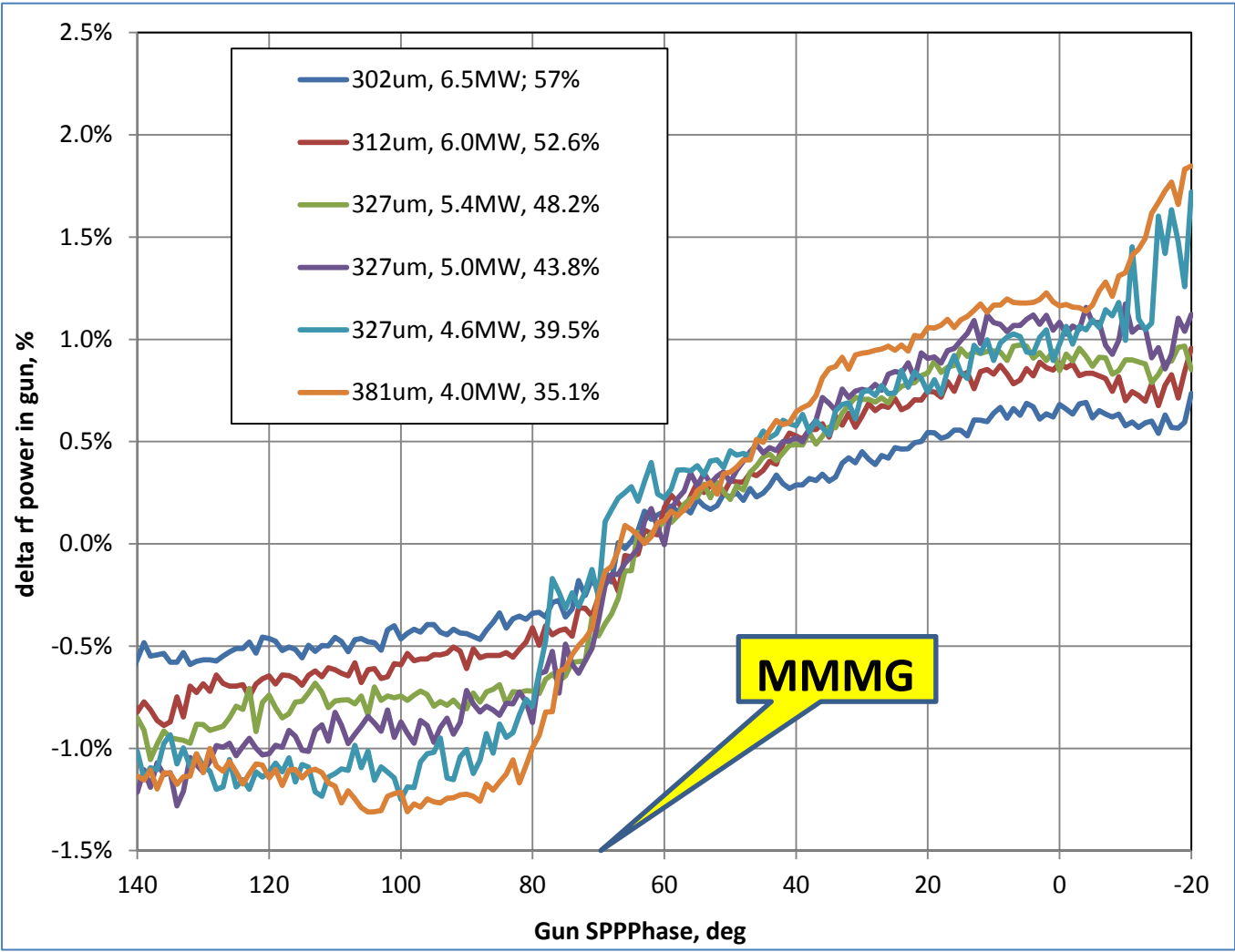


# New measurements from 13.03.2012A

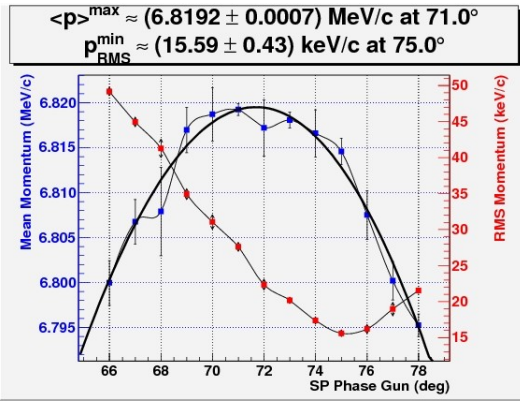


$0.586 \pm 0.97\%$

# By-product observations: klystron nonlinearity



—————1,%



# Conclusions

- The suggested invariant ( $E_{\text{cath}} * BSA$ ):
  - is not discarded
  - emission physics behind?
  - ?needs more detailed studies (e-meter, different laser t-profiles, etc.)
- Klystron nonlinearity near the MMG phase  $\sim 1..2\%$
- ...

# Looking for parameterization

