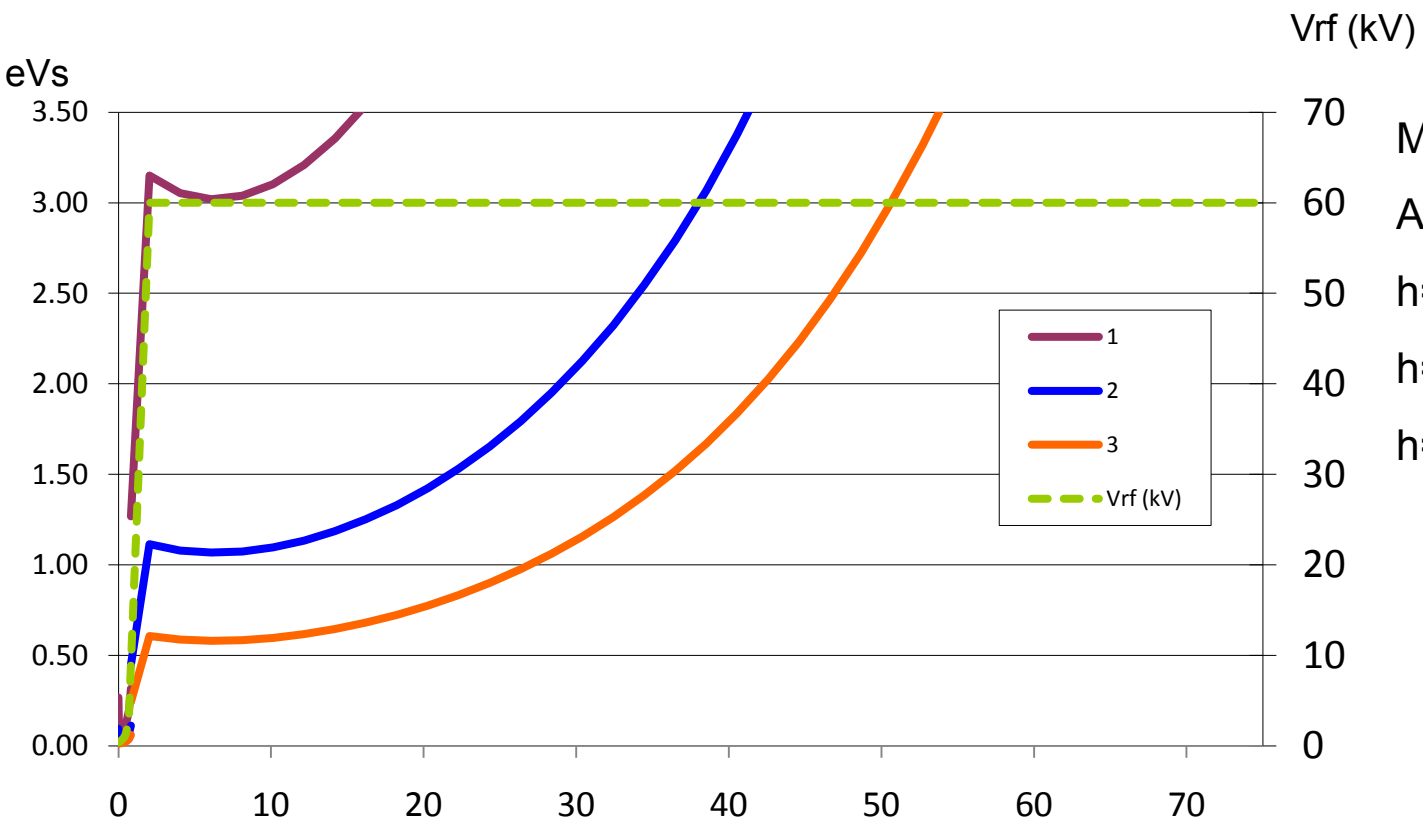
Bucket Area for h = 1,2,3

Vrf = 60kV, Frep=10Hz, Sinusoidal Ramp, 75% Rise time

(Complement to my presentation of 30/03/2011)



Min. Values [eVs]

Abucket / Abucket/4

h=1 …3.0 / 0.75

h=2 …1.1 / 0.27

h=3 …0.57 / 0.145

Steve Hancock's LHC Beam Parameter List

	25ns	50ns	75ns	150ns
Low-energy splitting factor	3	3	2	2
High-energy splitting factor	4	2	2	1
Total splitting factor	12	6	4	2
10MHz harmonic at injection	7	7	7	7
10MHz harmonic at high energy	21	21	14	14
Number of bunches per Booster ring	1	2	2	2
Number of bunches at injection	6	6	6	6
Number of bunches at extraction	72	36	24	12
Longitudinal emittance at injection [eVs]	1.30	0.90	0.90	0.60
Longitudinal emittance after BU1 [eVs]	1.30	1.30	1.30	0.65
BU1 blow-up factor	1.00	1.44	1.44	1.08
Longitudinal emittance after BU2 [eVs]	0.65	0.65	0.65	0.33
BU2 blow-up factor	1.50	1.50	1.00	1.00
Longitudinal emittance after BU3 [eVs]	1.30	0.65	0.65	0.33
BU3 blow-up factor	2.00	1.00	1.00	1.00
Longitudinal emittance at extraction [eVs]	0.35	0.35	0.35	0.35
Total blow-up factor	3.23	2.33	1.56	1.17
Total controlled blow-up factor	3.00	2.17	1.44	1.08
Uncontrolled blow-up factor	1.08	1.08	1.08	1.08

Proposed RCS Parameters

- Circumference $C = 4/21\ C_{PS}$
- $h = 1 + 2 \rightarrow h_{PS} = 7$

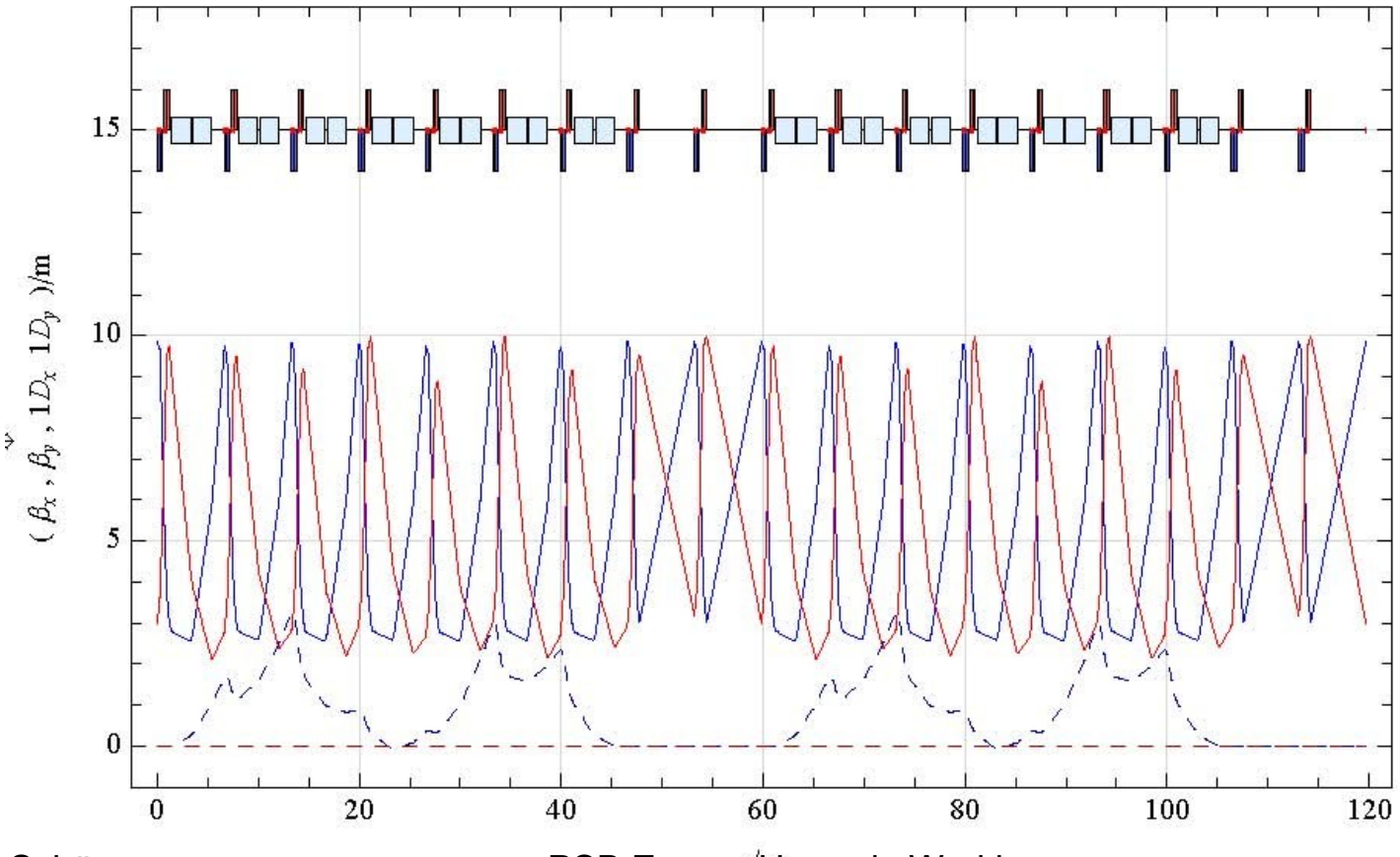
  (implies bunch splitting to h = 21 in the PS)
- Alternatively (If RF system allows): $h = 4$

  16 bunches into $h_{PS} = 21$ buckets;
- fast bunch blow-up at the end of the RCS cycle

Example Lattice (18 Cell Racetrack)

(M. Fitterer)

C=119.68 m, Q1 = 5.14286, Q2 = 5.14286, $gamma_t$ = 4.92



H. Schönauer

› RCS.tfs