Minutes of RESULTS, PITZ Physics Seminar, 2018-04-19

Project: PITZ
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1) Agenda
1. M. Bousonville "Multipacting in the Thales RF window: simulations and measurements"
2. M. Krasilnikov "Gun4.5: field balance fit"
3. AOB

2) Results:

1) M. Bousonville's talk
1. Cst F solver for field, PIC solver for multipacting
2. SEY curve for untreated copper, CST curve matches N. Hilleret
3. SEY cruve for Titanium coated ceramic window, treated as pure Titanium
4. Roughness is not measured for the window surface, and not considered in simulation.
5. 1000 particles randomly distributed on the surface around window area, 10 ns double, 20 ns double again, 40 ns 56000 electron, concentrated near ceramic surface
6. Linear growth in 20 ns, and then exponential growth, 1st order multipacting with growth step period of 1.3 GHz
7. Spectrum of multipacting vs power input, small change of power and reflection can cause big difference. Strong resonance between 2 – 7 MW. (2 weeks simulation time)
8. Conditioning: decrease of SEY by 5% and 15%, simulation shows much better results in multipacting
9. Baking window at 200 C will reduce conditioning time significantly (<< 2 weeks).
10. Gun situation is differently from test stand case.
11. Frank: what's the reason for the limit of 200 C from Thales recommendation?
12. Houjun: coat the copper; introduce external B field near the coners like XFEL
13. Mikhail: electron detector signal; multipacting in the RF edge area
14. Comment from HH: mT field is needed to deflect the resonance electrons.
15. Frank: multipacting in the rising edge of the RF pulse.

Protocol prepared by
H. Qian