

# Minutes of RESULTS, PITZ Physics Seminar, 2017-12-07

Project: PITZ

Participants:

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## 1) Agenda

1. AOB

2. **H. Qian: A NC-SRF hybrid gun concept**

## 2) Results:

1. AOB:

- i) For participants of DPG spring meeting next year, please register as soon as possible;
- ii) For PITZ Christmas party, please register and state what food you would bring;
- iii) For Ph.D. candidates and Postdocs, please be active to join seminars and/or other activities organized at DESY Zeuthen;
- iv) Be aware of the DESY policy that you can possibly take free days between Christmas and New Year because of extra working hours this year. To ask for such kind of free days, you need to fill in some formal application form (ask Mikhail and Anne);
- v) Whenever you take holidays or leave for conferences, workshops or meetings, please record it in the PITZ calendar.

2. HQ:

- i) Emittance plays even more important role in CW FEL machine
- ii) Approaches to achieve optimized (maximum) beam brightness at cathode
- iii) DC-SRF gun example at Peaking Uni -> DC gun (5MV/m) + 3.5 Cell RF cavity (23MV/m) + TESLA cavity -> not bad emittance from simulations
- iv) DC-SRF gun example at UCLA/SLAC/INFN, a NC cryo RF gun
- v) New concept: replace DC gun with NC RF gun to have NC-SRF gun-> >20MV/m, high QE compatibility, low voltage < 100kV, cryocooling, SRF cavity to increase beam energy
- vi) Preliminary design proposed; beam dynamics checked; Difficulties may mainly locate at the transition from NC cell to SRF cavity
- vii) Discussions with Hamburg cryo experts: a. 200W cryo load at 30K is possible; b. Connection between cells is critical. E.g., temperature gradient; fringe fields in the connection on the SC side

3. **HQ: First draft on Gun 4.6 report at the end of January, 2018**

Protocol prepared by

Y. Chen