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Prof. Tor Raubenheimer
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Geneva, 23 June 2009

Dear Tor,

Following the change of the CLIC frequency to X-band at the beginning of 2007 there has been a steadily increasing level of collaboration between SLAC and CERN on both CLIC and general high-gradient R&D. Some of the most crucial issues for the CLIC study are now covered by infrastructure and expertise at SLAC and the SLAC/CLIC collaboration has produced important new results like the 'T18' which ran at an unloaded gradient above 100 MV/m.

The purpose of this letter is to summarize and update the highest priority topics and corresponding timescales of our collaboration and make a sincere request to the SLAC management to continue to invest in the support necessary to make the collaboration a success.

The current rf structure collaboration was defined in a memorandum by Persis Drell dated 29 March 2007 and details were further defined in a meeting at SLAC in May of the same year. This led to a collaboration agreement signed 26 March 2008 and subsequent addenda. The SLAC/CERN rf structure and high gradient collaboration now has four main areas:

- High-power testing in NLCTA and ASTA – High-power testing of accelerating structures, PETS and rf components is vital for the CLIC study and a significant majority of CLIC tests are made at SLAC. Other facilities are NEXTEV at KEK, which has recently come online with a single test area, and CERN which will commission a single test area after the delivery of the SLAC klystron (next item) next year. PETS tests have begun in CTF3 and in the longer term we expect the facility to supply additional accelerating structure test capability. Consequently the importance of the three high-power stations at SLAC to CLIC will continue for at least the next two years or so.

- X-band klystron – The CLIC study is building a high power and high repetition-rate test stand based on the X-band klystron being developed and built by SLAC. This is an important step to increase the number of testing slots worldwide and to provide the essential direct exposure to high-power testing and associated issues for the CLIC rf structure development team. The klystron based test area compliments CTF3 with increased flexibility and a higher, 50-100Hz compared to 5-10 Hz, repetition rate.

- Structure fabrication – CLIC test structures are now being manufactured by SLAC, KEK and CERN. SLAC plays an important role in the manufacturing made at the other two laboratories in a number of ways. KEK machined structures are assembled and bonded at SLAC and the personal and technical contacts with KEK remain strong. CERN is still establishing its X-band disk-based manufacturing capability and SLAC's accumulated expertise developed during the NLC/JLC project remains crucial.

- ACD codes and computational infrastructure – The heavily-damped accelerating structures and heavily-damped and over-moded PETS represent serious computational challenges. The ACD group has already made impressive progress in simulating HOM damping, two-beam acceleration and dark currents. The simulations are exquisitely integrated in the CLIC experimental program - the dark current simulations are being compared to measurements at KEK and the two-beam simulations will be compared to measurements in the two-beam test stand in CTF3. We would like to expand the program on all of these topics and possibly extend the dark current simulations to include breakdown. This work can be made both through computations made by SLAC experts (as we do now) but also through computations made by CERN experts. We have already identified one of our post-docs for this purpose and would like to ramp up our activities over the coming months.

In addition to these specific subjects there are also the extremely important and successful personal contacts between experts at SLAC and CERN. Many new ideas at both labs have emerged from those contacts and we hope that the contacts can continue to be encouraged. In summary, the SLAC/CLIC collaboration covers many important subjects and has been producing very successful results. We hope that this success can continue.

Sincerely,

Dr. Walter Wuensch
Head of the CLIC structure
development program