



NLC News -

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Director's Column

There is no Director's Column this month. Check back in September for news from the Program Office.

The Modulator Moves!

Possibly the most significant event at NLC during the long, hot summer has been the successful move of the 76-stack solid-state modulator to its new home at the NLCTA 8-Pack experiment.

With excellent performance by SLAC riggers, the move was accomplished on July 30, 2002 in just 6 hours. The modulator, which weighs about 3.4 tons as moved and 5.12 tons as operated with oil and a full complement of boards, had been installed in the Power Systems building for shakedown testing. It is now installed in End Station B where it will power 4 50-MW klystrons for Phase I of the 8-Pack project. The modulator has now been tested in situ and has shown no adverse effects from the move.

The following photos document the transportation from Bldg 15 to End Station B.



The Modulator leaving the Power Systems Building



On the Road - the Modulator moves from Building 15 to End Station B



The Modulator being lifted over the NLCTA



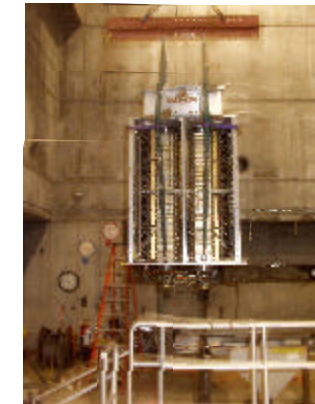
The Modulator enters End Station B, with the crane ready for the next phase of the move.



The Modulator on the 4-Dog Test Stand Next to the 8-Pack



Inside End Station B, the Crane is Ready to Pick Up the Modulator.



The Modulator is Ready to Place on the 8-Pack Stand

X-Band LC Costs Discussed at ISG-8 *Ted Lavine*

Linear Collider designers from the U.S. and Japan started to share and compare their separate cost projections for an X-band linear collider project last June 24–27, at the semiannual meeting of the U.S.-Japan International Study Group (ISG) on Linear Collider R&D. The International Study Group was created by SLAC and KEK in 1998 to formalize the collaboration on technology R&D for an X-band linear collider that had been on-going since the 1980s. Encouraged by the recent endorsement of the linear collider concept by the Asian Committee for Future Accelerators and the U.S. High Energy Physics Advisory Panel, the June Meeting was the first ISG meeting at which a working group discussed the cost of a linear collider construction project. Another working group discussed potential sites for the collider in the U.S. and Japan for the first time as the concept of collaboration grew from technology R&D to the vision of an international project.

The four-day meeting was attended by approximately 30 Japanese scientists associated with the JLC program based at KEK, and a similar number of U.S. collaborators from SLAC, Fermilab, LBNL and LLNL. In parallel with the usual technical discussions about X-band structures and power sources, damping rings, instrumentation, and site requirements, small groups of experts from the NLC and JLC teams also met together to focus on the separate cost analyses being conducted for injectors, X-band linacs, beam delivery systems, control systems and civil facilities.

The cost-related discussions focused on understanding the differences between the technical assumptions each team had made, and on the differences in quantities and per-unit construction costs assumed for various components, subsystems, and civil facilities. The initial comparison of costing models and methods did not reveal any fundamental oversights or inconsistencies.

A number of issues were identified by the NLC and KEK teams for further joint study and discussion, especially where substantially different estimates were found on some subsystems or components. In many cases the differences may have been due to differences in the configurations, technical designs or implementation models that were assumed. Both teams agreed to begin more systematic, comparative studies to understand the differences. They plan to continue the process of comparing their cost estimates, at the next level of detail, at the next ISG Meeting, being planned for late 2002 in Japan.

Eventual extrapolation from the cost of components and subsystems to the total cost of an international linear collider project will be complicated in many regards by national differences. For example: Industrial partnering models and rates for industrial labor may differ. Labor rates for Federal construction in the U.S. are governed by Davis-Bacon Act wage determinations. In contrast to U.S. project accounting standards, the total project cost in Japan does not include Lab staff salaries for engineering design, inspection and administration, systems engineering, project management, or preoperational testing. Contingency and confidence factors are handled differently in the different cost estimates. Thorough understanding of these and other complexities will be necessary in order to make meaningful the comparison of total project cost. The first round of ISG cost discussions was most valuable because it started the process.

Discussions are expected to continue at the next ISG Meeting being planned for late 2002 in Japan.

Peter Tenenbaum Nominated for Presidential Award

Peter Tenenbaum, or PT as he's usually called, a physicist in the NLC Accelerator Physics group, has been nominated for a prestigious Presidential Early Career Award for Scientists and Engineers. The award, which has a five-year duration, would provide some extra funding each year to support PT's research. It is expected that awards will be announced in the next few months.

In addition to PT, two other SLAC scientists have also been nominated.

Recent Linear Collider Publications

If you would like to have an NLC-related paper listed, please send information to amlarsen@slac.stanford.edu

I. Linear Collider Collaboration Notes

http://www-project.slac.stanford.edu/lc/ilc/TechNotes/LCCNotes/lcc_notes_index.htm

[LCC-0087](#), "NLC Polarized Positron Photon Beam Target Thermal Structural Modeling," Werner Stein, John C. Sheppard, July 2002.

[LCC-0088](#), "Thermal Stress Analyses for the NLC Positron Target," W. Stein, A. Sunwoo, J. C. Sheppard, V. Bharadwaj, D. C. Schultz, July 2002.

[LCC-0089](#), "Structural Modeling of Tesla TDR Positron Target," Werner Stein, John C. Sheppard, July 2002.

[LCC-0090](#), "Thermal Stress Analyses for a Thermal Multislug Beam NLC Positron Target," W. Stein, A. Sunwoo, J. C. Sheppard, V. Bharadwaj, D. C. Schultz

[LCC-0091](#), "Tests of 3 Linear Collider Beam Dynamics Simulation Programs" P. Tenenbaum, July 2002

[LCC-0092](#), "Positron Yield as a Function of Drive Beam Energy for a K=1, Planar Undulator-Based Source" J.C. Sheppard, July 2002

[LCC-0093](#), "Radiation damage induced by GeV electrons in W-Re targets for next generation linear colliders", M.-J. Caturla, S. Roesler, V. K. Bharadwaj, D. C. Schultz, J. C. Sheppard, J. Marian, B. D. Wirth, W. Stein and A. Sunwoo, July 2002

[LCC-0095](#), "Helical Undulator Radiation," J. C. Sheppard, July 2002

[LCC-0096](#), "Research and Development Issues for NLC Damping Rings 2002-2003," Andrzej Wolski, August 2002.

[LCC-0097 Rev. 1](#), "Autopsy on an RF-Processed X-band Travelling Wave Structure," F. Le Pimpec, S. Harvey, R.E. Kirby, F. Marcelja, August 2002.

[LCC-0098](#), "First Test of Short Period Helical SC Undulator Prototype," A. Mikhailichenko. T. Moore, August 2002.

[LCC-0099](#), "Space Charge Dynamics of Bright Electron Beams," Alexander W. Chao, Rainer Pitthan, Toshiki Tajima, and Dian Yeremian, August 2002.

[LCC-0100](#), "Systematic Ground Motion and Macro-Alignment for Linear Colliders," Rainer Pitthan, August 2002.

Calendar of Upcoming Events

Conferences of Interest

International Workshop on Linear Colliders (LCWS 2002), 26-30 Aug 2002, Jeju Island, Korea, <http://lcws2002.korea.ac.kr/>

26th Advanced ICFA Beam Dynamics Workshop On Nanometer Size Colliding Beams (Nanobeam 2002) 2-6 Sep 2002, Lausanne, Switzerland.

2002 ICFA Seminar On Future Perspectives In High-Energy Physics, 8-11 Oct 2002, Geneva, Switzerland

IEEE 2002 Nuclear Science Symposium (NSS) and Medical Imaging Conference (MIC) and Symposium on Nuclear Power Systems 10-16 Nov 2002, Norfolk, Virginia, <http://www.nss-mic.org>

Particle Accelerator Conference (2003 PAC) Portland, OR, 12-16 May 2003; Siemann@slac.stanford.edu