

**The Next Linear Collider Test Accelerator's RF Pulse Compression and Transmission Systems,** K. FANT, T. LAVINE, R.J. LOEWEN, C. PEARSON, R. POPE, J. RIFKIN, R.D. RUTH, S.G. TANTAWI, A.E. VLIEKS, SLAC, 2575 Sand Hill Rd., Menlo Park, CA,94025, U.S.A. - The overmoded rf transmission and pulsed power compression system for SLAC's Next Linear Collider (NLC) program requires a high degree of transmission efficiency and mode purity to be economically feasible. To this end, a number of new, high power components and systems have been developed at X-band, which transmit rf power in the low loss, circular TE<sub>01</sub> mode with negligible mode conversion. In addition, a highly efficient SLED-II\* pulse compressor has been developed and successfully tested at high power. The system produced a 200 MW, 150 ns wide pulse with a near-perfect flat-top. In this paper we describe the design and test results of a rectangular-to-circular mode converter and the components/transmission systems based on them, as well as the design and measurements of a high power pulse compression system using SLED-II. We will also describe how these components will be used to efficiently provide high power rf in the NLC Test Accelerator (NLCTA) program at SLAC.

\* P.B. Wilson, Z.D. Farkas, and R.D. Ruth, Linear Accel. Conf., Albuquerque, NM, Sept.'90; SLAC-PUB-5330.