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Implementation of multi-channel electronics system for astrophysical reaction studies at ORNL S.H. AHN, K.L. JONES, University of Tennessee at Knoxville, M. MATOS, Louisiana State University, D.W. BARDAYAN, K.Y. CHAE, M.S. SMITH, R.J. VARNER, Oak Ridge National Laboratory, J.M. ELSON, Washington University in St. Louis, M.A. FAMIANO, Western Michigan University — The development of large area, high-granularity silicon detector arrays has created opportunities to study transfer reactions in inverse kinematics with low-intensity radioactive beams. We are developing a new detector array comprised of 24 double-sided silicon strip detectors that will allow measurements with lower thresholds and better resolution than current detectors at ORNL. To instrument this new array, we are implementing ∼2000 channels of signal processing electronics based on application-specific integrated circuits (ASICs) designed at Washington University. The ASICs handle pulse shaping, timing, triggering, and digitization of 32 channels all on a single chip. In addition, a Real-Time Executive for Multiprocessor Systems (RTEMS) is used for a network communication between the electronics and data acquisition server. Details of the electronics setup and a status report on the devices will be presented. We will also discuss plans to utilize this system for experiments of transfer reactions using radioactive ion beams.

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