Compton suppression and event triggering in a commercial data acquisition system[1] SAMUEL TABOR, D.D. CAUSSYN, VANDANA TRIPATHI, J. VONMOSS, Florida State University, S.N. LIDDICK, National Superconducting Cyclotron Laboratory — A number of groups are starting to use flash digitizer systems to directly convert the preamplifier signals of high-resolution Ge detectors to a stream of digital data. Some digitizers are also equipped with software constant fraction discriminator algorithms capable of operating on the resulting digital data stream to provide timing information. Because of the dropping cost per channel of these systems, it should now be possible to also connect outputs of the Bismuth Germanate (BGO) scintillators used for Compton suppression to other digitizer inputs so that BGO logic signals can also be available in the same system. This provides the possibility to perform all the Compton suppression and multiplicity trigger logic within the digital system, thus eliminating the need for separate timing filter amplifiers (TFA), constant fraction discriminators (CFD), logic units, and lots of cables. This talk will describe the performance of such a system based on Pixie16 modules from XIA LLC with custom field programmable gate array (FPGA) programming for an array of Compton suppressed single Ge crystal and 4-crystal "Clover" detector array along with optional particle detectors. Initial tests of the system have produced results comparable with the current traditional system of individual electronics and peak sensing analog to digital converters. The advantages of the all digital system will be discussed.

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