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A digital signal decomposition algorithm for GRETINA[1] DAVID
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37831, USA — Energy-tracking arrays such as GRETINA and AGATA will be the
next generation of detector systems for in-beam gamma-ray spectroscopy. They
depend on digital pulse processing to extract the positions and energies of multi-
ple interactions in segmented high-purity Ge detectors. This processing makes use
of digitized signals both from the hit segments themselves, and the induced image
charges in neighboring segments. The complex algorithms involved make this pro-
cess the major computational bottleneck for these detectors, requiring a computer
farm at least of the order of 100 high-speed processors. For GRETINA, candidate
algorithms for signal decomposition include Adaptive Grid Search, Singular Value
Decomposition, and Sequential Quadratic Programming. Current work on the de-
velopment of the algorithm, and verification of its efficacy and resolution, will be
described.

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