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Maiko Arichi* (ma30@zip.s.uakron.edu), Department of Theoretical and Applied Math, Buchtel College of Arts and Sciences, The University of Akron, Akron, OH 44325-4002. *Real-time Ischemic Detection from Electrocardiograms using the Dilated, Discrete Hermite Transform.*

An automated identification technique was developed for the detection of ischemic episodes in long term electrocardiographic (ECG) signals using mathematical expansions involving the discrete dilated Hermite Transform. The discrete Hermite functions are generated as eigenvectors of a symmetric tridiagonal matrix that commutes with the centered Fourier matrix. The Hermite transform values are computed from a simple dot product between an individual ECG complex extracted from the European Society of Cardiology (ESC) ST-T database and the corresponding discrete Hermite function. These values are found to contain information about the ECG shape, highlighting changes between ST-segment deviation and T-wave alterations which are the features of ischemic episodes. This information from the discrete Hermite transform, based on an orthonormal set of n-dimensional digital Hermite functions that serve as shape-identification functions, can be used to identify ischemic episodes from the ECG. (Received January 18, 2011)