1067-Z1-2071 **William J Heuett*** (wheuett@marymount.edu), Department of Mathematics, Marymount University, 2807 N Glebe Rd, Arlington, VA 22207, and **Bernard V Miller** and **Vipul Periwal**.
An Improved Model for Predicting Beta-Cell Insulin Secretion Rate from C-Peptide Data.

In a clinical setting, it is important to be able to extract the pancreatic insulin-secretion rate (ISR) and quantify β-cell function from C-peptide measurements. Several models have been proposed in the literature, but some of these are sensitive to numerical interpolations. We present an improved two-compartment model. Using a smoothness norm, the model requires only a simple linear algebra calculation to yield an initial guess of the ISR. A cost function is defined in terms of the ISR's non-negativity and smoothness and its goodness-of-fit to the C-peptide data according to the two-compartment model. Finally a parallel-tempered Monte Carlo simulation is performed to predict the ISR and its associated statistics. We analyze the model's behavior for different time-discretization schemes.

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