

**T**EMPLE UNIVERSITY  
Department of Mathematics

**Applied Mathematics and  
Scientific Computing Seminar**

Room 617 Wachman Hall

Wednesday, 16 November 2005, 4:00 p.m.

**The Inverse Problem of Electrocardiography**

by Pavel Grinfeld

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**Abstract.** Catheter ablation, the most common treatment of arrhythmia, relies on accurate mapping of the electrical activity on the surface of the heart. Non-contact mapping necessitates the solution of the Inverse Problem of Electrocardiography in which the electrical activity is reconstructed from a finite number of measurements either from a catheter that floats freely in the heart's chamber or from external measurements taken on the subject's torso. The inverse problem is highly ill-conditioned and requires various regularization techniques. I will introduce the problem, give its mathematical formulation and talk about the effects of geometric uncertainties. Prepare to hear a lot about the SVD!