

Should the repair take longer than a predetermined patience time, or should the other unit also fail, immediately an expert repair person is called in to take over the repairing task. We call a model MER(multiple expert repair)/SER (single expert repair if the expert, once called in, will fix all/only one failed unit before leaving. We use RPT(random patience time)/DPT(deterministic patience time) to denote the case when the patience time is chosen to be random/deterministic. Sridharan and Mohanavadi (1998) proposed and study the SER-RPT model. We study 4 models: MER-RPT, SRE-RPT, MER-DPT and SER-DPT and derive the optimal conditions for limiting availability and profit per unit time for choices between these 4 models.

Liang Hong, Jyotirmoy Sarkar  
Indiana University - Purdue University Indianapolis  
lihong@iupui.edu, jsarkar@math.iupui.edu

Bruno Bieth  
Department of Mathematical Sciences  
Indiana University - Purdue University Indianapolis  
bbieth@math.iupui.edu

#### PP0

##### Optimization Approaches For The Inverse Elasticity Problem

This poster will focus on the inverse problem of identifying Lamé parameters in elasticity. This problem has found interesting applications in elasticity imaging (in locating cancerous tissues, and other abnormalities). We present several optimization based approaches that can be used to solve the inverse elasticity problem. Adaptive finite element methods are used in computations.

Baasansuren Jadamba  
Unemployed at this time  
jadamba@hotmail.com

Akhtar A. Khan  
Northern Michigan University  
akhan@nmu.edu

#### PP0

##### Identification of Transport Parameters of Soils From Column Tests

Application of optimization techniques for identification of transport parameters of soils: effective porosity, dispersivity and sorption factors is discussed. The source of data are results obtained from column tests for inert and sorbing ions migrating through different soils. The solutions of pde problems are based on finite element method for non-steady transport. Different loading modes and models of boundary conditions as well as scale effect are considered.

Mariusz Kaczmarek, K. Kazimierska-Drobnay  
Kazimierz Wielki University  
mkk@man.poznan.pl, xxxx@man.poznan.pl

M. Marciniak, M. Okonska  
A.Mickiewicz University

xxxx@xxx.xxx, xxx@xxx.xxx

#### PP0

##### Robust Optimization for Biological Network Calibration

Calibrating chemical-kinetics based differential equation models for biological networks is a task that is often made difficult by the limited amount of available experimental data. When an additional robustness constraint is included in the optimization problem, results suggest that the calibration can be made far less sensitive to a-priori parameter estimates. Research thus far has been conducted primarily in the context of signal transduction pathways, such as the mitogen-activated protein kinase pathway.

Bo S. Kim  
Research Laboratory of Electronics, MIT  
Dept. of Electrical Engineering and Computer Science,  
MIT  
kaede11@mit.edu

Bruce Tidor  
MIT  
tidor@mit.edu

Jacob White  
Research Lab. of Electronics  
MIT  
white@mit.edu

#### PP0

##### Pennon 1.0 - A Code for Nonlinear Semidefinite Programming

We will present PENNON 1.0 - the first release of the code for solving mathematical optimization problems with real and matrix variables, smooth nonlinear (nonconvex) objective and smooth nonlinear equality and inequality constraints. All functions may depend on both types of variables. Additionally, the matrix variables may be subject to spectral constraints, in particular, to positive semidefinite constraints. Matlab and extended AMPL interface allow the user to formulate the problems easily. We will present a few of numerous applications of the code.

Michal Kocvara  
School of Mathematics  
University of Birmingham  
kocvara@maths.bham.ac.uk

Michael Stingl  
Institut für Angewandte Mathematik  
Universität Erlangen-Nürnberg, Germany  
stingl@am.uni-erlangen.de

#### PP0

##### Optimization of Cosmological Surveys

Due to the huge investment in next-generation Cosmological surveys aimed at answering fundamental questions about the Universe, successful optimization of their design is vital. We consider an example, the optimization of the