

# Mini-Symposium on Inverse Problems in Heat Transfer

*Mini-symposium proposed for the joint IACM /ECCOMAS  
Congress to be held in Venice on June 30th - July 5th 2008*

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## **Objectives:**

Inverse problems arise often in engineering and science applications where the unknown values of some model parameters are sought using observed data. For instance, in heat transfer, inverse problems may arise in the reconstruction of an unknown spatially and temporally varying heat flux at a surface inaccessible to measurement utilizing measurements of temperature at interior locations of the conducting solid or by utilizing over-specified (Cauchy conditions) at surfaces amenable to measurement. As such, inverse problems are typically ill-posed, as defined by Jacques Hadamard, and this is in sharp contrast to the traditional well-posed problem modeling systems where all relevant thermo-physical properties, boundary conditions and initial conditions are known and where the temperature field is normally sought by analytical when possible or generally by numerical methods. Inverse problems are sensitive to input data and specialized techniques have been developed and are currently under development to stabilize their solution.

As the field of inverse problems in heat transfer engineering has developed rapidly in the past decades with wide-reaching applications ranging from reconstruction of convection coefficients, process control in manufacturing, to IR thermography in subsurface flaws, defects, and cavity detection, the purpose of this mini-symposium is to bring together scientists and engineers to expose new methods and applications of inverse problems in heat transfer.

We will personally advertise this mini-symposium to our colleagues and will electronically advertise this mini-symposium via such IPNET, BENET, and PORONET and other such electronic email services to the inverse problem, heat transfer and boundary element communities.