Title: Heating rods and pipes.

Speaker: Prof. Alexander Solynin, Texas Tech University.

Abstract

In this talk, based on a joint work with Prof. Dimitrios Betsakos from the Aristotle University of Thessaloniki in Greece, we will discuss problems concerning the heat distribution in rods and pipes. In particular, we consider solutions u_f to the one-dimensional Robin problem with the heat source $f \in L^1[-\pi, \pi]$ and Robin parameter $\alpha > 0$. For given m, M, and s, $0 \le m < s < M$, we identify the heat sources f_0, such that u_{f_0} maximizes the temperature gap $\max_{[-\pi,\pi]} u_f - \min_{[-\pi,\pi]} u_f$ over all heat sources f such that $m \le f \le M$ and $\|f\|_{L^1} = 2\pi s$. We also identify heat sources, which maximize/minimize u_f at a given point $x_0 \in [-\pi, \pi]$ over the same class of heat sources as above and discuss few related questions.