1077-35-1240 **Plamen Stefanov*** (stefanov@math.purdue.edu). *Thermoacoustic and Photoacoustic Tomography with a variable continuous or discontinuous sound speed.*

We will review recent theoretical and numerical result on Thermoacoustic and Photoacoustic Tomography obtained in collaboration with Jianliang Qian, Gunther Uhlmann and Hongkai Zhao. We will present necessary and sufficient conditions for uniqueness, and such conditions for stability for full or partial boundary measurements and a smooth speed. For observation on the whole boundary, we present an explicit inversion formula of Neumann series type. We will discuss similar results for a piecewise smooth speed modeling brain imaging. We will illustrate the theoretical results with many numerical reconstructions. (Received September 18, 2011)