

Inversion of the spherical means transform by reduction to the classical Radon transform

Prof. Dr. Leonid Kunyansky (University of Arizona, Tucson)

In photoacoustic tomography, an acoustic wave is generated within an object of interest in response to a short laser pulse. To form an image, one measures acoustic pressure on a surface surrounding the region of interest, and reconstructs the initial acoustic pressure from the measured data. Mathematically this is equivalent to reconstructing a function from its spherical means with centers lying on the measuring surface. Explicit reconstruction formulas for this problem are known only for a few simple measuring surfaces. In the present talk we consider certain corner-like acquisition geometries popular among practitioners. For such surfaces, our exact reconstruction formulas allow one to recover from the measurements the classical Radon projections of the sought function, and, thus, the function itself.