SIAM Talk

Friday November 14, 2014

12:00 PM, LC 312

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Title

Electron tomography – Approximating Functions from Line Integrals

Given only integrals of an unknown function along many arbitrary lines, how well can one approximate the function? This problem, known as tomography, is important in many areas of science, including biology, medical science, and materials science. In this talk we will investigate methods for recovering functions which represent particles as small as 10^(-9) meters, from line integrals generated using a transmission electron microscope. These methods have to overcome many obstacles due to the nature of the data gathering and small scale in which the problem is posed. Some of the newest methods will be presented, making use of regularization techniques and even discrete approaches. Before doing so, a thorough introduction to the problem will be given, as well as many theoretical and practical considerations.

