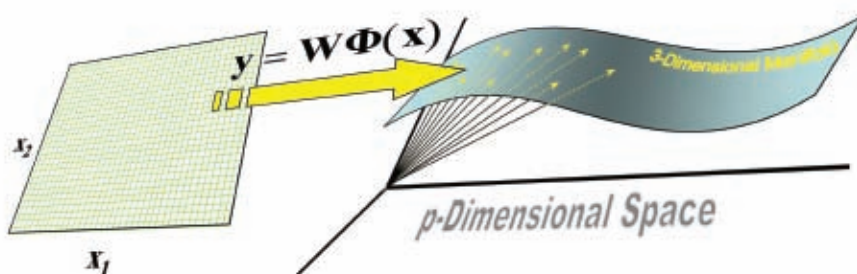


Abbas Ourmazd

“Determining the Structure of Individual Macromolecules and Nanoparticles”

Ever shattered a valuable vase into 10^6 pieces and tried to reassemble it under a light providing a mean photon count of 10^{-2} per detector pixel with shot noise? If you can do that, you can do single-molecule crystallography. This talk will outline how this can be done in principle.

In more technical terms, the talk will describe how the combination of scattering physics and Bayesian algorithms can be used to reconstruct the 3-D diffracted intensity distribution from a collection of individual 2-D diffraction patterns down to a mean photon count of 10^{-2} per pixel, the signal level anticipated from the Linac Coherent Light Source, and hence determine the structure of individual macromolecules and nanoparticles.



Abbas Ourmazd, a graduate of Oxford University, is Professor of Physics and Electrical Engineering at the University of Wisconsin-Milwaukee. His research activities have ranged from electron microscopy, holography, and x-ray scattering to microelectronic devices and systems for high-speed communication. He has held academic appointments at Oxford, Göttingen, and Brandenburg, and has been Head of Microphysics at Bell Labs, Director of the IHP (a German national laboratory), and Vice Chancellor for Research and Dean of the Graduate School in Wisconsin. He has also launched and led two high-tech startups. His awards have included an Alexander-von-Humboldt Fellowship, and the Johnson-Matthey prize. He is author/co-author of over 130 publications, holder of 10 patents, and a Fellow of the American Physical Society.

Wednesday, March 5, 2008
3:00 p.m.

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