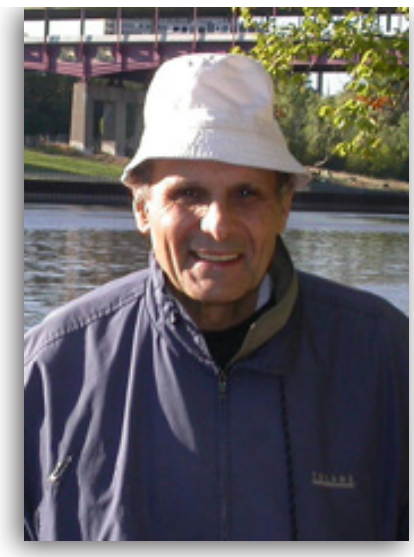
DISTINGUISHED LECTURE SERIES

NUS National University of Singapore | IMS Institute for Mathematical Sciences



Professor Mel Levy

Mel Levy is Emeritus Professor at Tulane University. He obtained his PhD at Indiana University and postdoctoral education at Johns Hopkins University. He is one of the founders of the Density Functional Theory (DFT), and his works include the constrained-search formalism, the identification of the derivative discontinuity, the development of DFT perturbation theory, the discovery of many exact conditions on density functionals for the purposes of their approximations, especially those involving coordinate scaling, variational principles for excited states, and many more. He is a member of the International Academy of Quantum Molecular Science and Fellow of the American Physical Society.

Coordinate Scaling Constraints in Density and Density-Matrix Functional Theories

5 SEP 2019 (THURS) | 9.45–10.45AM

First, the histories of density and density-matrix functional theories will be presented. Then, the constrained-search definitions of these theories will be given through the use of spin-free wave functions. Finally, for the purposes of approximating these functionals, their fundamental coordinate scaling properties, and other properties, will be proven and analyzed.

On the History, Variational Foundations, and Evolution of Time-Independent Density-Functional Theory

10 SEP 2019 (TUES) | 12.30–1.30PM

The talk traces the history, variational foundations, and evolution of time-independent density-functional theory, from its origins about one hundred years ago, through its initial formal justification about fifty years ago, through its often frosty reception, to its present widespread acceptance and use today. Constraints for approximating the exact functionals, such as those involving coordinate scaling, will be analyzed. Stories, of course, will be told about the interesting people involved.

Venue
Auditorium
Institute for Mathematical Sciences
3 Prince George's Park
Singapore 118402

This event is part of the program on Density Functionals for Many-Particle Systems: Mathematical Theory and Physical Applications of Effective Equations (2–27 Sep 2019), which is partially supported by

JSF Julian Schwinger Foundation

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