

CHEMISTRY SEMINAR SERIES

Department of Chemistry | College of Arts and Sciences


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Meeting ID: 676 915 7893

Passcode: 552210



Tantalum 73 Ta 180.95	Magnesium 12 M 24.31	Uranium 92 U 238.03	Potassium 19 K 39.098
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February 6 | 3:00 – 4:00 pm | Nier 251

A Memorial Lecture on the Life and Quantum Science of Arno Rudolf Bohm



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Rudolf A. Bohm, PhD

With the passing of Arno Rudolf Bohm on December 29, 2024, the field of physics lost an accomplished scientist who helped the physics world keep its bearings. He did this by forcing “riggings” onto Hilbert Space. It was thus called “Rigged Hilbert Space” by Israel Gelfand, one of the first users and a friend of Bohm. Simplifications such as rigging a mathematical space like one might put riggings on a sailboat were used to simplify the mathematics. Other simplifications like symmetry were used for spectral analysis and other quantum mechanical methods. We discuss these methods and how they fit into the life of someone who spent most of it deep in the pursuit of mathematical physics. He transformed his findings into knowledge by authoring five books (totaling 11 editions), publishing 118 journal articles on physics and math, and speaking at more than 50 conferences. His most famous book was his undergraduate textbook on Quantum Mechanics that was translated into 5 languages and multiple editions. He leaves behind a legacy of Physics at the University of Texas at Austin where he was Professor and taught a wide range of physics courses including graduate courses on mathematical physics and quantum theory, and supervised 19 Ph.D. students. Though rigged in place in Austin, Texas, he collaborated internationally and traveled often to incorporate ideas from the entire world. We present in this memorial, a telling of his travels and what he learned in these escapades.

Biography:

Rudolf Bohm, PhD, who presents the memorial of his father, is an Associate Professor in Biology at Texas A&M University - Kingsville where he has a neurogenetics lab that focuses on defects in the nervous system that cause epilepsy. Dr. Bohm began his graduate work with Dr. Nigel Atkinson at the University of Texas at Austin where he worked on activity dependent changes in gene expression in the potassium channel slowpoke. From Austin, Dr. Bohm did a post-doc at Harvard Medical School in the lab of Dr. Thomas Schwarz at Children’s Hospital. Here he worked on synaptic mutants and made null mutants in Synaptotagmin IV which he found to be disappointingly viable. He was beat to a Science paper by a lab at MIT. He began again in a post-doc with the Nobel Laureate, Dr. Jeff Hall who used genetics to uncover the circuitry underlying Drosophila behaviors. The work he began there was published as the cover of the Proceedings of the National Academy of Science (PNAS). This paper was a method to dissect circuitry using a genetic trick that allowed selection of subsets of circuits by the intersection of two patterns he called the FINGR (Flippase induced Gal80 Repression) method because it pointed to the critical elements in a circuit that controlled a behavior. In 2013, he began research at Texas A&M University – Kingsville on genes that cause electrical defects. Here he improved the methodology by using CRISPR to design mutants in the channels that cause epilepsy in humans in the same places that they cause the human mutations (or mutations in the homologous gene in fly at the position that causes childhood human epilepsies). He has secured 2 NIH grants, 4 Moxley Family Foundation awards, an NSF genomics award and multiple other smaller awards to support his work on epilepsy. He also teaches a range of biology classes from first year Biology I to graduate classes in Molecular Biology.