

## **The Peculiar Story of Quantum Mechanics, and How it will Change our Future**

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### **Abstract:**

Quantum mechanics is the physics of all things on the atomic scale of dimensions. It arose in the early twentieth century from a few extraordinary leaps of logic, in response to a few serious inconsistencies in classical physics. Like all good physics, it relies on agreement between theory and experiment. Quantum mechanics has an aura of mystery and uncertainty. Richard Feynman said (paraphrasing): "Anyone who thinks he understands quantum mechanics ought to have his head examined." Indeed, every new discovery reveals unanswered questions, and important questions remain unanswered. This said, quantum mechanics is manifest in our everyday life in simple and striking ways. Further, there is promise and likelihood of technology breakthroughs in the coming decades, including quantum computing, machine learning, deep learning, and artificial intelligence. To quote Julius Robert Oppenheimer: "Scientific discovery occurs not because it is useful, but because it is possible".

### **Bio:**

Tim Groves remains a lifelong scholar. He has enjoyed a long and distinguished career as a research scientist, technologist, engineer, and mathematician. He worked at HP Labs and later at IBM's Semiconductor Research and Development Center. He was Chief Technologist for one of Leica's divisions, and most recently was a Professor of Nanoscale Science at the College of Nanoscale Science and Engineering, State University of New York. He retired as Vice President of Academic Affairs at the College in 2014 to move to Palo Alto. He currently has two new ventures, one to create simulation software for charged-particle beam systems which is affordable to individual users, and the other to develop a massively parallel array source for electron beam instruments. He received his BS in Physics from Stanford University and his PhD in Physics from the University of Chicago. He is married to Marybelle Cody, and lives in Palo Alto.