

# Carl Bender

Wilfred R. & Ann Lee Konneker Professor of Physics, Washington University in St. Louis

**In the World of  
Complex Numbers  
Classical Mechanics &  
Quantum Mechanics  
are Very Much Alike**

Tuesday,  
April 27, 2010  
3:00 PM

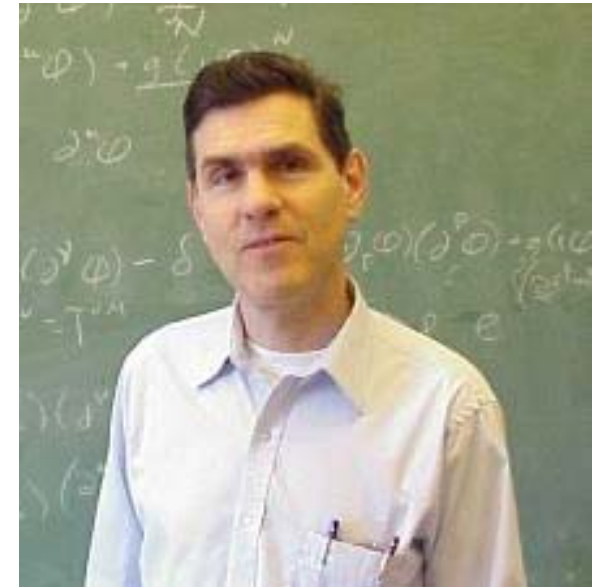
**K-State Hale Library  
Hemisphere Room**

## *Lecture on Quantum Physics for the General Public*

Classical mechanics and quantum mechanics are two very different theories: In classical mechanics the motion of a particle is governed by Newton's laws and we can say exactly where the particle is and how fast it is going at all times. In quantum mechanics, on the other hand, particles display wavelike properties and predictions are probabilistic in character.

Many years ago, mathematicians generalized the real number system to the complex number system. By doing this, mathematicians can understand and explain the real number system more clearly.

What happens if we follow the mathematicians and generalize real physics to complex physics? We will see that, despite the enormous differences between classical mechanics and quantum mechanics in the real world, these differences melt away in the complex world and these two theories behave in an eerily similar fashion.



*Dr. Carl Bender*

*Chester Peterson, Jr. Public Lecture in Physics*