

# QUANTUM PHYSICS AND QUANTUM TECHNOLOGY

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## On the motion of macroscopic bodies in quantum theory

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Quantum observables can be identified with vector fields on the sphere of normalized states. The resulting vector representation is used in this paper to undertake a simultaneous treatment of macroscopic and microscopic bodies in quantum mechanics. Components of the velocity and acceleration of state under Schroedinger evolution are given for a clear physical interpretation. Solutions to Schroedinger and Newton equations are shown to be related beyond the Ehrenfest results on the motion of averages. A formula relating the normal probability distribution and the Born rule is found.

### Biography

Alexey A Kryukov received his doctoral degree from the School of Mathematics of the University of Minnesota and from Division of Theoretical Physics, Department of High Energy Physics of St. Petersburg State University. He is currently professor of mathematics at the Department of Mathematics, University of Wisconsin Colleges. His research interests are in Functional Analysis, Differential Geometry, and Quantum Theory and General Relativity. His recent publications in JMP, Physics Letters and Foundations of Physics are dedicated to finding a bridge between classical and quantum physics and gravity.

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