Invited talk

From Schrödinger kittens to UV spectroscopy

Arndt M.

University of Vienna, Boltzmanngasse 5 A-1090 Vienna, Austria

markus.arndt@univie.ac.at

When Erwin Schrödinger introduced his famous thought experiment of a cat being both dead and alive, he identified entanglement as a crucial ingredient.

However, entanglement is not a strict requirement for creating massive quantum superpositions of distinct states, even in warm, organic, or inorganic systems.

Over the years, our group in Vienna has developed a range of experiments that demonstrate the quantum delocalization of massive objects over distances hundreds of times their own diameter.

These objects range from carbonaceous molecules to polypeptides, tailored macromolecules to clusters of molecules — which may be well described as Schrödinger kittens.

I will review our recent efforts and advances in scaling up from "kittens" to more massive biological and metallic nanoparticles and discuss how such experiments both require and contribute to UV spectroscopy.