University of Stuttgart
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iRyd

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Universität Stuttgart
NWZ II, Room 4.319
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The Optical Vortex: a curious object with promising uses in Nanotechnology

The early '90 witnessed a breakthrough in optics with the development of techniques to generate coherent beams of highly inhomogeneous light, known as optical vortices or twisted light, that exhibits unique features: a phase singularities, orbital angular momentum, topological features, etc. The interest in optical vortices quickly grew and extended beyond optics into diverse areas of physics and even other sciences.

After a brief introduction, I will show that optical vortices are indeed strange light fields, challenging our intuition based on plane waves and Gaussian beams. But their odd features are more than a curiosity, they bring about new processes in their interaction with matter. In particular, I will discuss some predicted new effects on semiconductors and possible applications to nanotechnology.