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**Lecture I, II: Electromagnetic vorticity in Astronomy.**

In the quest for a more complete knowledge about the Universe, astronomy and astrophysics, in general actively promote new advanced techniques and revolutionising physics ideas.

In this spirit, the application of novel concepts from electromagnetic field theory and quantum mechanics and optics is currently opening a new era in astronomy.

The use of orbital angular momentum (OAM) of light allows telescopes to break the Rayleigh criterion limit, increasing their resolving power by up to one order of magnitude, thereby making way for a detection of exoplanets and measure the rotation of black holes.

These new concepts, together with the principles of quantum mechanics, hold the promise to give a more in-depth information of astrophysical phenomena, providing new perspectives to our cosmic vision, much the same way that spectroscopy did at the end of the 19th century.