Abstract Submitted
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Light scattering by magnetized nanoparticles: spatial quantization of light, symmetry breaking and plasmonic vortexes[1] ARTUR DAVOYAN, NADER ENGHETA, University of Pennsylvania — In this work we study theoretically light scattering by magneto-active plasmonic nanoparticles. We show that magnetization leads to the nanoscale symmetry breaking in the excitation of the surface plasmon polaritons, associated with the plasmonic eigen-mode degeneracy lifting. The latter implies the split of the plasmonic resonances in the nanoparticle extinction spectrum and the formation of the plasmonic vortexes. We show that such a phenomenon is deeply related to the quantization of the light angular momentum, thus revealing an optical analogy with the quantum Zeeman effect. Our work provides a paradigm for mesoscopic quantized systems.

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