Optical Topological Transitions in Metamaterials

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The interaction of light with matter can be engineered by controlling the photonic density of states (PDOS). I will discuss our recent work on optical topological transition in strongly anisotropic metamaterials that can be used to engineer the PDOS [1]. The transition in the topology of the iso-frequency surface from a closed ellipsoid to an open hyperboloid manifests itself in increased rates of spontaneous emission of emitters positioned near the metamaterial.

References

[1] H. Krishnamoorthy, Z. Jacob, E. Narimanov, I. Kretzschmar, and V. M. Menon, Topological transitions in metamaterials, Science 336, 205 (2012).