

Photon localisation and Bloch symmetry breaking in luminal gratings

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In gratings synthetically moving at nearly the velocity of light a symmetry breaking transition is observed between free-flowing fluid-like Bloch waves observed at lower grating velocities and, at luminal velocities, condensed, localised states of light captured in each period of the grating and locked to its velocity. We introduce a new technique for calculating in this regime and use it to study the transition in detail shedding light on the critical exponents, and the periodic oscillations in transmitted intensity seen in the pre-transition regime [1].

[1] Photon localisation and Bloch symmetry breaking in luminal gratings

E Galiffi, MG Silveirinha, PA Huidobro, JB Pendry, Phys. Rev. B **104** 014302 (2021).