POZVÁNKA NA PŘEDNÁŠKU

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Photonic Band Gap Materials: Light Trapping Crystals

Přednáška bude přednesena v angličtině
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Abstrakt

Photonic band gap(PBG) materials [1,2] are artificial periodic dielectric mictrostructures capable of trapping light in 3D [3] on subwavelength scales without absorption loss. This offers new opportunities for efficient solar energy trapping and harvesting in suitably micro-structured thin films [4-6]. It also enables virtually complete control of the flow of light on microscopic scales in a 3D optical chip [7-9] as well as very strong coupling of light to matter where desired. By further engineering the electromagnetic density of states [10-12], it is possible to realize unprecendented coherent optical control of the quantum state of resonant atoms or quantum dots [13,14].This defines fundamentally new strong-coupling regime for quantum optics.
I review some of the underlying physics and numerical approaches to describing light trapping in photonic crystals. I also discuss ongoing challenges to experimentally realize the consequences of this remarkable effect.

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