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**Theory of Anderson Localization of Light in Real World Disordered Samples**

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Abstract:

To derive Anderson localization of light is one of the holy grails of our time [1]. We show in this talk theoretical results derived by Vollhardt-Woelfle theory of photons [2,3,4] in 3D disordered, finite sized real world systems. Signatures of Anderson localized states are determined and they can be clearly distinguished from extended light-matter bound states as well as frequency converted photons and losses. Kerr-broadening is discussed.

T. Sperling et al., Nature Photon. 7, 48-52 (2013) G. Maret et al., Nature Photon. 7, 934-935 (2013) A. Lubatsch et al., Phys. Rev. B 71, 184201 (2005) R. Frank et al., Phys. Rev. B 73, 245107 (2006)