



# 复旦大学物理系 Colloquium

Time: 13:00, Tuesday, 2021.04.06

Location: Room C108, Jiangwan Physics Building

## Microcavity-enhanced surface nonlinear optics

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**Abstract:** Confinement and manipulation of photons using microcavities have triggered intense research interest in both fundamental and applied photonics for more than two decades. Prominent examples are ultrahigh-Q whispering gallery microcavities which confine photons by means of continuous total internal reflection along a curved and smooth surface. The long photon lifetime, strong field confinement, and in-plane emission characteristics make them promising candidates for enhancing light-matter interactions on a chip. In the first part of this talk, I will introduce some representative photonics applications of ultrahigh-Q microcavities. In the second part, I will introduce the second-order nonlinear optics induced by symmetry breaking at the surface of an ultrahigh-Q silica microcavity under a sub-milliwatt continuous-wave pump. By dynamically coordinating the double-resonance phase matching, a second harmonic is achieved with a conversion efficiency of  $0.049\% W^{-1}$ , 14 orders of magnitude higher than that of the non-enhancement case.



**主讲人简介:** 肖云峰，北京大学博雅特聘教授。于2002年和2007年在中国科学技术大学物理系分别获得物理学士和博士学位；随后赴美国圣路易斯华盛顿大学从事博士后研究；2009年回到北京大学物理学院工作，历任“百人计划”研究员、长聘副教授、长聘教授。主要从事超高品质因子光学微腔的实验和理论研究。近年来，以主要作者在Science、Nature Photonics、Nature Communications、PNAS和Physical Review Letters等国际重要杂志发表研究论文170余篇，他引5000余次，h因子46。研究成果两次入选“中国高校十大科技进展”（2014、2017），1次入选由美国光学学会评选的“年度国际光学重大进展”（2018），4次入选“中国光学十大进展”（2010、2016、2017、2019）。获第八届饶毓泰基础光学奖（2013）、王大珩光学奖（2017）、教育部青年科学奖（2018）、饶毓泰物理奖（2018-2019）、陈嘉庚青年科学奖（2020）和中国青年科技奖（2020）；被选为美国光学学会会士（2019）。