Brillouin random fiber lasers: coherent laser sources and beyond

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Brillouin random fiber lasers (BRFLs) utilize Brillouin scattering gain and Rayleigh scattering feedback in optical fibers, offering a superior coherent laser source with unique spectral dynamics and noise properties. As a new breed of laser, coherent BRFLs have shown immense potentials in practical applications such as fiber optics communication and fiber sensing. Furthermore, numerous energetically equivalent random laser modes ultimately allow the BRFL system disordered and quenched, providing compelling opportunities to explore fundamentals involving photonics and complex systems such as replica symmetry breaking, rogue waves and turbulence. In this talk, recent advances and challenges in the performance improvements and fundamentals of BRFLs will be presented and discussed.

Short Bio:

Liang Zhang received the B.S. degree in applied physics and the Ph.D. degree in optical engineering from Shanghai Jiao Tong University in 2009 and 2016, respectively. From 2016 to 2019, he has been a Postdoctoral Fellow at University of Ottawa (Canada). Currently, he is a full professor of Shanghai University, China. He is author or co-author of over 100 papers in peer-reviewed journals and international conference proceedings. His research interests include fiber laser and fiber sensing.