

Taming Random Lasers

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In this talk, I will introduce the concept of random laser. First, I will present an innovative mirrorless optofluidic random laser where the optical cavity has been replaced by a disordered structure. This device serves to show that control can be regained on the random lasing emission. We achieve emission control at any desired wavelength by iteratively shaping the optical pump profile. Our method extends the paradigm shift operated recently by wavefront shaping techniques for imaging through opaque media, to the control of highly complex media, namely open disordered nonlinear active media. It shows that complexity is not necessarily an obstacle but may help to meet a given optimization criterion.