Random Laser Can Be Accurately Controlled

The light random laser emit is as unique as a fingerprint: random lasers are tiny devices with a light emission pattern governed by random scattering of light. Understanding the underlying details of random lasing action has only been achieved recently. Now scientists at the Vienna University of Technology have presented a method to steer the radiation emitted by a random laser into a pre-determined direction. What has started out as a curious idea now has the potential to become a useful new type of light source.

As all random lasers are different, this optimization process has to be carried out for each device individually – but once the solution is known, the same laser beam can be created again and again. In principle, one could also steer the laser beam from a given direction to any other direction by changing the pumping pattern appropriately.

Professor Stefan Rotter’s team from the Institute of Theoretical Physics at the Vienna University of is cooperating with a research group in Paris, where random lasers are fabricated and studied in the lab. Together, the researchers now want to test their findings in the experiment. If the experimental results indeed show that random lasers can be forced to relinquish their randomness, this would constitute a major step towards technological applications of these exotic new light sources.

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More information: