

RESEARCH HIGHLIGHT

Open Access

Massively parallel chaos for LiDAR

Shaohua Yu¹✉

Nature Photonics 17, 306–314 (2023)

<https://doi.org/10.1038/s41566-023-01158-4>

LiDAR is an essential sensor for Level 3+ autonomous driving due to its unparalleled ability of accurate 3D mapping in real-time. However, the congestion problem, which occurs when their channel occupations overlap in time or frequency domain, has prevented the allowed channel number of individual LiDAR but also limits the density of working devices. This challenge, combined with the significantly increased cost when building the parallel LiDAR systems, has been stalling the progression of LiDAR technologies. A team of researchers from Peking University and the University of California, Santa Barbara, has found a promising new solution by using chaotic

comb. This massively parallel chaotic source has inherent self-chaotic properties, that make each channel orthogonal to each other, showing good immunity to other LiDAR signals and single PD detection capability. This advancement has the potential to reshape the LiDAR ecosystem, providing a low-cost, efficient, and reliable solution for the next generation of LiDAR technologies. The simplicity of its architecture combined with its exceptional performance opens up a new era of LiDAR technology, with endless possibilities for further development and application.

Received: 18 March 2023 Accepted: 19 March 2023

Published online: 18 April 2023

Correspondence: Shaohua Yu (yushh@pcl.ac.cn)

¹Peng Cheng Laboratory, Shenzhen 518055, China

© The Author(s) 2023



Open Access This article is licensed under a Creative Commons Attribution 4.0 International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license, and indicate if changes were made. The images or other third party material in this article are included in the article's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this license, visit <http://creativecommons.org/licenses/by/4.0/>.