Fraunhofer IZM

FRAUNHOFER INSTITUTE FOR RELIABILITY AND MICROINTEGRATION IZM

PRESS RELEASE

The future of data centers at the OFC

At the international Optical Networking and Communication Conference OFC, experts from the tele- and datacommunication have been discussing optical innovations and visions for the future of the industry since 40 years. In addition to the companies Cisco, Google, and Microsoft, Fraunhofer IZM will present the next generation of data center infrastructure at the technical exhibition from March 3 to 7 in San Diego.

Cloud storage and computing, big data analyses, and social media require higher bandwidth communication in data centers. At the same time, trends such as itemization and virtualization are forcing data centers to make traffic between servers and storage elements more efficient. These changes require massive switching capabilities of the discrete switching elements. However, today's technology quickly reaches its limits in this regard. The result is a multilayered structure of data centers with high power consumption and a long leading function. This is where the L3MATRIX project, financed by the EU's Horizon 2020 research and innovation program, comes in. Within 36 months, the Fraunhofer Institute for Reliability and Microintegration IZM and seven partners from six EU member states and two associated countries (Switzerland and Israel) will develop the next generation of data center infrastructure.

As part of the international trade exhibition for optical communication and data center trends at the OFC, the project partners will now present a demonstrator with a co-package technology platform. This is currently the largest silicon photonics matrix on the market with 64 modulators and integrated lasers. The L3MATRIX project thus offers technological innovations in the fields of silicon photonics and the integration of 3D devices. The aim of the project partners is to develop a novel matrix with a larger scale than any other device and to integrate more than 100 modulators on a single chip and laser sources with a logic chip.

Details on the project can be found at https://l3matrix.eu/ or at the L3MATRIX booth at the OFC in San Diego from March 3 to 7 under booth number 3842.

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About the L3MATRIX project

L3MATRIX offers a new method of building switching elements that have both high radio frequency and an extended bandwidth of 25 gigabits per second in single-mode fibers and low-conductivity waveguides. The power consumption of these devices with structured direct-current grids is ten times lower compared to conventional technologies. The result of this approach is that large networks on a petabyte-per-second scale can be built as a single-level, non-blocking network. The single-mode character of the chip allows the network to be scaled to the 2000-meter range required in modern data centers. By reducing power consumption and minimizing the number of non-revenue-generating devices, operators could deploy more servers and storage elements in data centers.

With a budget of €3 million over three years, the project brings together leading European companies, universities, and research institutes that can boost great expertise and experience in silicon photonics, III-V materials, and 3D device integration. The consortium is led by Fraunhofer IZM as project coordinator and Dust Photonics (Tel Aviv-Jaffa, Israel) as technology manager. Further partners are AMS AG (Austria), IBM Research (Switzerland), Aristotelio Panepistimio Thessalonikis (Greece), the University Politecnica de Valencia (Spain), BRIGHT Photonics BV (Netherlands), and University College London (United Kingdom).

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