Alternate-phase return-to-zero transmitter based on integrated dual-parallel Mach-Zehnder modulator

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A simple 20 Gbit/s alternate-phase return-to-zero (APRZ transmitter is demonstrated using a 10 Gbit/s integrated dual-parallel Mach-Zehnder modulator (DPMZM . Two RZ streams are time-multiplexed with stable and adjustable phase relation. Simulation results show that the APRZ generated by this transmitter is robust to nonlinear transmission impairments.

Introduction:

respectively. It can be seen that, with $\pi/2$ phase alternation, ghost pulses in bits of 0 can be greatly reduced, and for certain applications, where tight ltering is experienced, carrier suppressed RZ can be employed by controlling the phase difference between adjacent bits to be π.

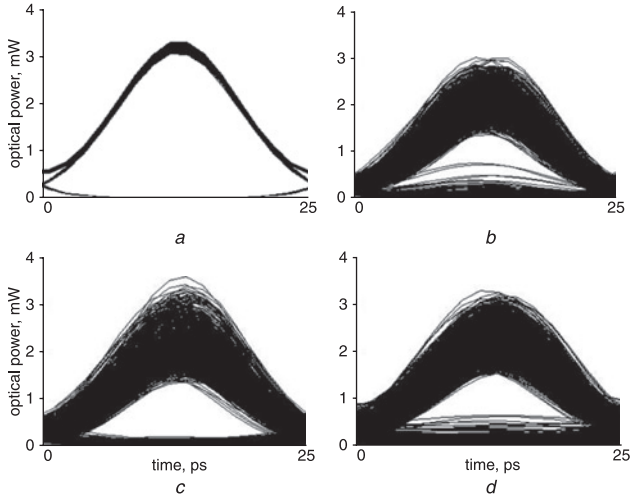

Fig. 3 *Received eye-diagrams*

a Back-to-back, and after transmission with alternate-phase of *b* 0, *c* $\pi/2$ and *d* π, respectively

Conclusion: We have proposed and experimentally demonstrated an APRZ transmitter based on single DPMZM that does not require a pulse carver. The transmission performance of the generated signal is investigated through simulations.

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