

## NOR Gate Based on QD-SOA at 250 Gbit/s

**Amer Kotb**

Fayoum University, Egypt

The performance of all-optical logic NOR gate based on quantum dot-semiconductor optical amplifier (QD-SOA) is simulated. By solving the rate equations of QD-SOAs when incorporated in the arms of a Mach-Zehnder interferometer (MZI) the performance of NOR gate is numerically investigated. The model takes into account the impact of the amplified spontaneous emission, the input pulse energy and the injection current density on the system's quality factor. Results show that NOR gate using QD-SOA is capable of operating at speeds of 250 Gbit/s with proper quality-factor.

### Biography

Amer Kotb has been awarded a full joint scholarship sponsored by the Egyptian Government for two years to conduct Ph.D., research studies connected to his Ph.D. registered at the Fayoum University. These researches are carried out at Connecticut University, Connecticut, USA under the supervision of Prof. Niloy K. Dutta. He has obtained Ph.D. degree from the Department of Physics specialization "Electronics" in January 2012 from Faculty of Science, Fayoum University, Fayoum 63514, Egypt. He has published 8 papers in reputed journals and one book in all-optical logic gates using semiconductor optical amplifiers (SOAs).

amer\_22003@yahoo.com