

Irradiation Tests of 4x10 Gbps QSFP+ Transceivers from Luxtera/Molex

- Irradiated two transceivers at ~ 2 krad/h (Co^{60} source at BNL)
- Did not see any dose-rate effects
- **I²C digital control interface in the optical chips failed at 165 and 256 krad. → That is the weakest link in radiation hardness of the optical chip**
- The transceivers were fully operational after the loss of I²C connections till we power-cycled them
 - ❖ The temperature sensor has degraded significantly
 - ❖ No bit-errors
 - ❖ Calibration of the ADC shifts slightly; 4% per 100 krad.
 - ❖ Laser and the voltage regulator chip resisted irradiation well.
- **Phases of MZIs were very stable → Likely the optical part of the chip has radiation tolerance higher than 1 Mrad.**