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

• Irradiated two transceivers at ~2krad/h (Co\textsuperscript{60} source at BNL)
• Did not see any dose-rate effects
• \textit{I}^2\textit{C} digital control interface in the optical chips failed at 165 and 256 krad. \(\Rightarrow\) That is the weakest link in radiation hardness of the optical chip
• The transceivers were fully operational after the loss of \textit{I}^2\textit{C} 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.
• \textbf{Phases of MZIs were very stable} \(\Rightarrow\) \textbf{Likely the optical part of the chip has radiation tolerance higher than 1 Mrad.}