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# Advancement of the Optical Fiber Transmission System

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The quality of the beam from a single-mode laser is higher compared to that of other multi-mode lasers due to its operating process, which is based on a single transverse resonating system. Its beam quality factor, i.e., M2, is less than 1.03, so the relation between the ridge width of this laser and the size of the core of the fiber is important for the successful signal transmission.
Due to the narrow active area and larger power densities at the facet of this laser, the dispersion compensation will become a more important factor in this research. Finally, the optical fiber communication based on the non-return to zero (NRZ) technique with a single-mode laser diode is investigated in this simulation process by OptiSystem software 19.0. It would be observed that the merits and demerits of the optical transmission system are driven by the peak current of a single-mode laser for a certain fiber length.

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