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Characteristic Study on Conventional and Soliton Based Transmission System

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Abstract : Here, we study the characteristic feature of conventional (ON-OFF keying) and soliton based transmission system. We consider 20 Gbps transmission system implemented with Conventional Single Mode Fiber (C-SMF) to examine the role of Gaussian pulse which is the characteristic of conventional propagation and hyperbolic-secant pulse which is the characteristic of soliton propagation in it. We note the influence of these pulses with respect to different dispersion lengths and soliton period in conventional and soliton system, respectively, and evaluate the system performance in terms of quality factor. From the analysis, we could prove that the soliton pulse has more consistent performance even for long distance without dispersion compensation than the conventional system as it is robust to dispersion. For the length of transmission of 200 Km, soliton system yielded Q of 33.958 while the conventional system totally exhausted with Q=0.

Keywords : dispersion length, retrun-to-zero (rz), soliton, soliton period, q-factor
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