

Construction of a new code for spectral amplitude coding in optical code-division multiple-access systems

An enhanced code structure for spectral amplitude coding in optical code division multiple access systems based on double weight (DW) code families is proposed. Enhanced double weight (EDW) codes possess ideal cross-correlation properties such as maximum cross correlation of 1 and a weight that can be any odd number greater than 1. It has been observed through theoretical analysis and experimental simulation that EDW codes perform significantly better than Hadamard and modified frequency-hopping (MFH) codes. In this study, point-to-point transmission with three EDW-encoded channels was tested at the bit rate of 10 Gbit/s per channel.