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(54) Title: OPTICAL CDMA SYSTEM USING SUB-BAND CODING		
(57) Abstract An optical fiber communications system uses spread spectrum code division multiple access techniques to achieve better bandwidth utilization. A transmitting user in the system encodes the optical signal using a first coding mask, and a receiving user decodes the received signal using two decoding masks, all of the masks having lengths N. The first mask is divided into two sections of lengths N/2 each, one of the sections defining a first sub-code of length N/2, while the other section blocks light. Each of the second and third masks is also divided into two sections, which correspond to the two sections of the first mask. The section of the second mask corresponding to the coded section of the first mask has a second code that is identical to the first code, and the section of the second mask corresponding to the blocked section of the first mask is also blocked. The section of the third mask corresponding to coded section of the first mask has a third code that is complementary to the first code, and the section of the third mask corresponding to the blocked section of the first mask is also blocked. Some users on the system have masks in which the first of the two sections are blocked and the second of the two sections are coded, while other users have masks in which the second of the two sections are blocked and the first of the two sections are coded. The first codes used to code the encoding masks are selected from a set of unipolar codes that are derived from a set of balanced bipolar orthogonal codes.		

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