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## Optimizing bandwidth density in free space optical interconnects under the use of error correcting codes

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**Abstract:** The bandwidth density of error corrected free space optical interconnects is considered in this article. Analyses for the bandwidth density with and without error correcting codes are presented and compared. It is shown that the bandwidth density can be improved using error correcting codes with code rate as a design parameter. Moreover, it is shown that the fill factor of the detector array can be used as a parameter to further improve the bandwidth density for the coded system. Numerical results on the effect of using the code rate and fill factor to optimize the bandwidth density are presented and discussed.