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Distance Spectra for Trellis Coded Modulation Schemes on Channels with Intersymbol Interference

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Abstract: The effect of intersymbol interference on distance spectra for trellis coded 8-PSK, 16-QAM and 32-AMPM modulation schemes is evaluated using the methods proposed by Schlegel. Distance spectra of 16-state 8-PSK scheme are computed for different intersymbol interference channels. It is seen that on channels with intersymbol interference the spectral lines are spread into a nearly continuous spectrum and the minimum Euclidean distance between codewords decreases severely. Hence, although the main contribution at large signal to noise ratios comes from the minimum Euclidean distance (d_{free}) , higher spectral components also become very important at moderate values of the signal to noise ratio.

Key Words: Trellis Coded Modulation, Distance Spectrum, Intersymbol Interference.

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