Trellis Coded Modulation For Mobile Satellite Communication Systems

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Abstrak

The simplest model that is frequently used for a transmission channel is the additive white Gaussian noise (AWGN) channel model. In this model the received signal is the sum of the transmitted signal and Gaussian noise. The simple channel model has great theoretical and practical importance and is an accurate model for many communication channels, such as satellite and deep space communication channels. In many communication systems, however, the channels are subject to various impairments in addition to the additive noise. For these channels the simple model of AWGN is no longer valid and one must consider more practical and complex channel models. One of the such channel types which frequently occur in radio communication is the fading channel.

In mobile radio communication system, the propagation between a base and a mobile station is not only by a direct line-of-sight path, but via many paths. These propagation paths depend largely on the. scattered reflection from many obstacles near the base and mobile stations. The received signal, at any place, consist of a large number of waves arriving from many directions. These multipath waves interfere and produce a varying field strength. The base station receiver experience similar fading as the mobile transmitter moves. The signal fluctuation rate is proportional to the vehicle speed. In many fading channels, in addition to the diffused multipath fading, there exists a dominant line-of-sight (direct) signal component. Denoting the direct component by Acos(2fct), the received signal then can be written as r(t)= (A + a1 (t)) cos(2fct) + aQ sin(2fct)