

# THE APPLICATIONS OF CODEM CONCEPTS FOR COMMUNICATIONS OVER THE AERONAUTICAL CHANNEL<sup>1</sup>



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**Summary** The aeronautical channel characterized by multipath interference due to scattering and reflections off the surface of the earth represents a difficult channel for obtaining reliable data transmission. It is shown that interfering paths can be of sufficient strength and have Doppler spreads such that conventional forms of modulation are severely limited. In order to obtain error probabilities below  $10^{-5}$  over a wide range of channel conditions, a robust signaling approach which is relatively insensitive to short term channel conditions is necessary. It is shown that these robust properties can be obtained by Codem concepts which jointly optimize the modem and coding design.

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