Implementation Aspects of Fixed-Complexity Soft-Output MIMO Detection

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Abstract: This paper discusses implementation aspects of a recently proposed fixed-complexity soft-output (FCSO) symbol detector for MIMO systems [4]. A further approximation to the FCSO detector is proposed which substantially reduces the complexity at the cost of a minor performance loss. With the resulting method, it is possible to carry out close-to ML detection for MIMO systems with a large number antennas (e.g. 4x4) using higher-order modulation schemes (e.g. 64-QAM) at low silicon cost in real-time. Furthermore, the parallelism inherited by the FCSO algorithm allows massive parallel processing which makes the method suitable for implementation in multi-core baseband signal processing hardware architectures.