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(54) **RECOVERY OF CORRUPTED 5G/6G MESSAGES BY MODULATION QUALITY**

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(57) **ABSTRACT**

Message faults are inevitable in the high-throughput environment of 5G and planned 6G. Retransmissions are costly in time and resources, while generating extra backgrounds and interference. Therefore, methods are disclosed for recovering a faulted message by identifying and correcting each mis-demodulated message element. The faulted message elements generally have substantially lower modulation quality than the correctly demodulated elements, and can be identified by determining the modulation quality of each received message element. If the number of faulted message elements is small, the receiver may correct them using a grid search tested by an associated error-detection code. If the number of faults exceeds a predetermined threshold, the receiver can request a retransmission, and then assemble a merged copy of the message by selecting the message element with the best modulation quality from each version. Substantial time and resources may be saved, and reliable communication may be restored despite poor reception.