



Sudan University of Science and Technology
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Modified Self Cancellation for Reduction of Inter Carrier Interference in Orthogonal frequency division multiplexing System

**تعديل الإلغاء الذاتي للتقليل من تداخل الناقل في
تعامد تقسيم التردد مضاعفة نظام**

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قال تعالى:

قَالُوا سُبْحَانَكَ لَا عِلْمَ لَنَا إِلَّا مَا عَلَّمْتَنَا إِنَّكَ أَنْتَ الْعَلِيمُ الْحَكِيمُ

صدق الله العظيم

الإهداء :

إلى من تعهداني بالتربية في الصغر ، وكانا لي نبراساً يضيء فكري

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إلى من شملوني بالعطف ، وأمدوني بالعون ، وحفزوني للتقدم ، إخوتي ،

وأخواتي

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gave me succor, and pasha me to progress, brothers, and
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إليهم جميعاً أهدي ثمرة جهدي ، ونتائج بحثي المتواضع .

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ومن حق النعمة الذكر ، وأقل جزاء للمعروفه الشكر

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Abstract

Orthogonal frequency division multiplexing (OFDM) is considered as a one of the best modulation schemes in wireless communications however, OFDM suffers from the Sensitivity to frequency offset his frequency offset introduces the problem of inter-carrier interference (ICI) in OFDM system.

This Project presents a new self-cancellation technique (modified self-cancellation technique) using the self-cancellation technique with zero – gab. In proposed technique a zero sub-carriers carries are used in order to mitigate the interference occurred by the main – lobe of the two adjacent sub-carriers, in addition to zeros sub-carrier, the proposed technique used self-cancellation in order To mitigate the effect of the side-lobes of other sub-carriers.

In terms of carrier-to-interference ratio (CIR) and bit-error rate (BER) the modified self-cancellation technique gives good results compared to that using only the Conventional self-cancellation technique.

مستخلص:

يعتبر متعامد التردد مضاعفة باعتبارها واحدة من أفضل برامج تعديل في الاتصالات اللاسلكية ولكن، يعاني من الحساسية للتردد تعويض يدخل مشكلة تداخل بين الناقل في نظام .

في التقنية المقترحة يحمل يتم استخدام صفر حاملات فرعية من أجل التخفيف من التدخل وقعت بسبب الرئيسي – الفص اثنين من ناقلات الفرعية المتجاورة، بالإضافة إلى أصفار الفرعي الناقل، واقتراح التقنية المستخدمة إلغاء الذات من أجل التخفيف تأثير الجانب فصوص من حاملات فرعية أخرى.

من حيث نسبة الناقل إلى التدخل ومعدل بت خطأ تقنية إلغاء الذاتي تعديل يعطي نتائج جيدة مقارنة بما كان عليه فقط باستخدام تقنية إلغاء الذات التقليدية.

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Abbreviation

OFDM	Orthogonal frequency division multiplexing
MCM	multi-carrier Modulation
ISI	inter symbol interference
DFT	discrete Fourier Transform
IDFT	inverse DFT
ICI	inter-carrier interference
CP	cyclic prefix
ESDC	enhanced symmetric data conjugate
CIR	carrier-to-interference ratio
FFT	Fast Fourier Transform
SC	Self-Cancellation
ISI	Inter Symbol Interference
BER	Bit Error Rate
LTE	Long Term Evolution
ML	Maximum likelihood
CSI	channel state information
FDM	Frequency Division Multiplex
MCS	Modulation and Coding Scheme
PAPR	Peak Average Power Ratio

