



**ECE-24**

## Statistical Analysis of Different Chaotic Sequences Code Using Logistic Chaotic Map

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There is no doubt that the spread spectrum technique becomes one of the most important communication techniques in the recent decades. It provides high security, in addition to its resistance to the various interference and fading types. One of the most important parameter of the

spread spectrum is the spreading code used in the spreading process, especially in the direct sequence spread spectrum. Due to the huge increase in the applications and the demanded users, the traditional spreading codes become not sufficient to fulfill the development requirements. As an

alternative solution, the chaotic codes appeared to solve most problems of the traditional spreading codes. Recently, many researches focused on the chaotic codes, due to its attractive security properties, in addition to its availability to generate a huge number of spreading codes. This property is very useful in the multi-access applications. However, as the number of the MAI is increased, the performance of the chaotic codes is degraded. This paper presents a statistical analysis of the Chaotic Spreading Code (CSC) generated from the logistic map. The analysis is performed over the traditional chaotic cod, the self-balanced (SB) chaotic code, the zero mean (ZM)

chaotic code, and the self-balanced zero mean (SBZM) chaotic code. The analysis consists of the balance property, the orthogonality property, the normalized maximum autocorrelation side lobe (NMACSL) property, and the normalized average cross correlation (NACC) property over different code lengths.