**TEST THE DOPPLER EFFECTS OF CODES THAT GENERATED BY GENETIC ALGORITHM USING AMBIGUITY FUNCTION**

**Abbas Salman Hameed**

Assistant Lecturer, Electronic Engineering Department, College of Engineering, University of Diyala

abbasfuture@yahoo.com

(Received: 20/04/2014; Accepted: 23/10/2014)

**ABSTRACT: -** Using pulse compression at the receiver side of communication systems yields sidelobes around the mainlobe that permits the clutter to pass through it, and mask the desired signal. In this paper, a proposed Genetic Algorithm (GA) is used to generate optimum binary phase coded signals with minimum Peak Sidelobe Level (PSL) as criteria. It is shown that, when programmed genetic algorithm, the generated codes up to length 105 bits, with minimum peak sidelobe level vary from (1-5).

Then the comparison of sample of the codes that generated by this algorithm with unoptimum code has the same length to obtain the effectiveness of the generated codes. It is found that the codes produced from the genetic algorithm has high efficient by reduction the peak of sidelobe level and merit factor than other codes. Test the Doppler effects of these codes by plotting the ambiguity function and calculating the value of peak sidelobe Level (PSL) and the properties of different Doppler shifts at (0.0, 0.05, 0.1 and 0.15) are done in this paper. It found that the performance of the optimum binary phase coded signals which generated by genetic algorithm that better than unoptimum codes when the Doppler shifts was increased.

**Keyword:** Genetic Algorithm (GA), Ambiguity Function (AF), Merit Factor (MF), Minimum Peak Sidelobe (MPS), Autocorrelation Function (ACF), Peak Sidelobe Level (PSL).