

## **DIRECTIONAL COUPLER BASED ON METAMATERIAL SQUARE CSRR SHAPE**

**BENMOSTEFA NAIMA**

STIC Laboratory, University of Tlemcen, P.B 230, Pole of Chetouane, Tlemcen- Algeria

### **ABSTRACT**

Metamaterials are artificial structures that can be designed to exhibit specific electromagnetic properties that are not in the nature. In this paper, we design a directional coupler, based on the theory of the split-ring resonators (SRRs), and the complementary SRR (CSRRs). The simulations of the directional coupler are based on the SRR and CSRR square structures. The advantage of this circuit is that the area of the coupling is great as regards to the coupler based on the circular structures of the SRR and CSRR. The results of simulation with the miniature structures show the backward-wave phenomenon of the left-handed (LH) material.

**KEYWORDS:** Directional Coupler, Metamaterial SRR and CSRR, Square Shape, Backward Waves