Abstract :

The objective of this paper is to use the recently proposed galaxy-based search optimization algorithm to enhance the capacity of a multiple input multiple output (MIMO) system with rectangular arrays at both communication ends (transmitter and receiver). This new optimization tool has been recently introduced and is a metaheuristic technique inspired by the dynamics of galactic arm spirals. It is characterized by its robustness, immunity to local optima trapping, relative fast convergence and ease of implementation. The idea is to extend the results obtained for the one-dimensional array geometry to the two-dimensional case. The purpose is to find out which array geometrical dimensions produce the highest capacity value. Compared to the linear array case, promising capacity values are found using the two-dimensional arrays which suggests their deployment in future MIMO communication systems.