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A STATISTICAL MODEL OF BIG DATA FOR KA BAND MULTIPLE SPOT BEAM
COMMUNICATION SATELLITE THROUGHPUT PREDICTION**Abstract**

The number of users of Ka band multiple spot beam communication satellite system reaching millions is tremendous relative to C/Ku VSAT system. And the bandwidth efficiency for the system is very low if we used the method for VSAT system. Even though there are new algorithms such as convex programming, 0-1 programming, artificial neural network, genetic algorithm, taboo search, dynamic programming, analytic hierarchy process, gray relative analysis method, dominant strategy equilibrium and strategic equilibrium, cooperative and non-cooperative game etc., we focus on the communication network. Although these algorithms with different names, the idea is the same: first we build model based on communication network, then we obtain the objective function with the highest rate of convergence or top efficiency or other objective, last we solve the objective function obtain the max or min value. In most cases the value is local optimal solution, and the convergence speed, convergence property are also challenges. In this paper we focus on the users driving force for the network throughout. For the million users the behavior habit of using network can be prediction and this is the idea of big data. According to the idea we adopt Markov chain to model the prediction model. With the number of users increasing, the performance of the model is optimizing relative to other traditional algorithms. However, the idea of big data made a great success in many field, and it is a worth a try in satellite communicate resources optimization and scheduling.