**Detecting critical nodes for network vulnerability assessment under cascading failures**


ABSTRACT

Recently, the major challenge in the robustness evaluation of networks is to enhance the detecting the most critical nodes. Many researchers have studied the problem of detecting the list of attacked nodes, which are the number of failed nodes is maximum, in order to protect these nodes. However, there is no any previous works to consider the cost of attacks that the budget is limited is very practical in the real attacks. In this paper, we study the problem of attacking nodes in networks to maximize the total profits of attacked nodes, where the total cost of attacks is remained under the budget. In addition, an algorithm is proposed to solve problem of attacking nodes in the network with limited budget while guaranteeing the high total profits of attacked nodes. Simulation results show that the proposed method provides good performance.



**Keyword:** Cascading failure; Power grid; Limited budget; Maximum profit