Cognitive radio network is an emerging technology in a wireless communications for effectively utilizing the unused spectrum, which are called "spectrum holes". This paper gives the scope for analyzing the literature which manages the spectrum through game theory approach. This work is an analysis of various games through which the cognitive users utilize the spectrum based on the agreement with the primary users for optimum utilization of the spectrum. The different games designs provide a state-of-art for addressing the various criteria's and challenges are encountered during the allocation of spectrum. This paper summarizes different games and its strategies to allocate the spectrum to the cognitive users.

**Index Terms**

Computer Science

Wireless

**Keywords**

Cognitive Radio  Spectrum Allocation  Cooperative Game  Non-cooperative