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**Sender-Jump Receiver-Wait: a simple blind rendezvous algorithm for distributed cognitive radio Networks**

**Abstract:**

Cognitive radio (CR) has emerged asan advanced and promising technology to exploit the wireless spectrum opportunistically. In cognitive radio networks (CRNs), any pairwise communicating nodes are required to rendezvous on a commonly available channel prior to exchange information. In the earlier research, the most popular method is selecting a Common Control Channel (CCC) in CRNs to establish the rendezvous. However, employing a CCC has many problems such as the control channel saturation, vulnerability to jamming attacks, and inapplicability to dynamic network scenarios. Therefore, the blind rendezvous, which requires neither CCC nor the information of the target user’s availablechannels, has recently attracteda lot of research interests. As a contribution to this research area, in this paper we propose a Sender-Jump Receiver-Wait(SJ-RW)blind rendezvous algorithm, which has fully satisfied the following requirements: 1) guaranteeing rendezvous;2) realizing full rendezvous diversity, i.e., any pair of users can rendezvous on all commonly available channels;3) requiring no time-synchronization;4) supporting both symmetric and asymmetric models;5) supporting multi-user/multi-hop scenarios and 6) consuming short Time-to-Rendezvous (TTR). Theoretical analysis, computer simulations and experiment with testbedhavevalidatedthe proposed SJ-RWalgorithm.

**Existing System:**

In cognitive radio networks (CRNs), when SUs intend to communicate with others,they need to locate each oth-er on the spectrum to establish a communication link. The process of two users attempting to meet on a common channel is referred to as the “rendezvous”.Although IEEE 802.22 specifications stipulate the MAC layer to be able toutilize dynamically spectrum according to the changes of environment, details about the mechanismfor such rendezvousinvolved are not specified.

In IEEE 802.22 wireless regional area networks (WRAN), base station(BS)as a controller regulates the communication between consumer premise equipments (CPEs).It is not difficult to understand employing a dedi-cated common control channel (CCC) is manageable and effective to exchange information for BSs’ regulating communications in theIEEE 802.22 based WRAN. Hence most early works on this aspect utilizedCCC[3-5] to fa-cilitate the rendezvous process. However,the CCC designmay be inflexible or even fragile todramaticallydynamic networks scenarios. Specifically, the CCC may face prob-lem of controlling channel saturation when the control channel reaches saturation so that no more users are al-lowed to achieve rendezvous in large scale networks. Al-so,the CCC is vulnerable to jamming attacks.

**Proposed System:**

To address the issues mentioned above, “Blind rendez-vous” algorithms, which require no dedicated CCC andany informationofthe target user’s available channels, are presented. Channel-hopping (CH) is one of the most representative techniques for blind rendezvous. In these methods, each userin a CRN selects a set of available channels and thenhops among these channels to rendezvous with its potential neighbors. However, intuitively, the blind rendezvous may cause low efficiency in rendezvous processemploying CH scheme. In this aspect, the specific costs–benefits analysis are made. Moreover, some efforts on re-source management usethe radio environment maps and spectrum usage estimation to improve rendezvous probability to bring high efficiency to blind rendezvous process.With this helpblind rendezvous can also achieve efficient performance that is the sameor even better than CCC scheme.