Optimal Power Allocation and Relay Selection in Green Cooperative Communication

Author(s) - Institution(s):
Cen Ling TJU
Silvia Ruiz Boqué UPC
Xuefeng Yin TJU
Mario Garcia-Lozano UPC

Corresponding author email: 1233557@tongji.edu.cn

Corresponding WG group: WG3

Abstract:

Cooperative communication with spectrum sharing has been proved as an efficient way to reduce energy consumption. In this work, we address the problem of the best relay selection and optimal power allocation. In this system model, secondary user (SU) acts as relay to assist in the transmission of primary user (PU) with the reward to transmit its own information. On one hand, the SU is selected using the metric of the energy efficiency by considering the outage capacity and energy consumption in a decoding and forward (DF) relaying. On the other hand, the optimal power allocation is obtained from solving a convex optimization problem aiming at minimizing network energy consumption with guaranteed quality of service (QoS). It is observed that cooperative communication performs better than non-cooperation transmission in saving network consumption. It is also noted that more candidates of the SUs leads to lower power consumption of the network and better energy efficiency.