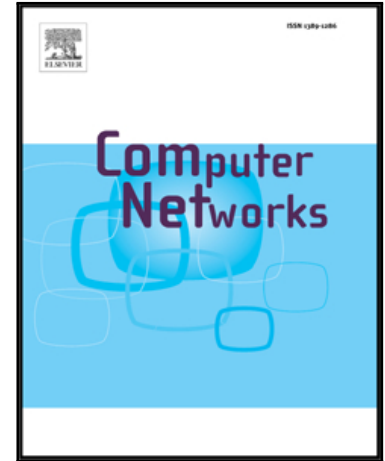


Accepted Manuscript

Performance Analysis of Underlay Two-way Relay Cooperation in Cognitive Radio Networks with Energy Harvesting

Fanzi Zeng, Jisheng Xu, Yongfeng Li, Kang Li, Lei Jiao

PII: S1389-1286(18)30318-9
DOI: [10.1016/j.comnet.2018.05.023](https://doi.org/10.1016/j.comnet.2018.05.023)
Reference: COMPNW 6502



To appear in: *Computer Networks*

Received date: 14 August 2017
Revised date: 9 April 2018
Accepted date: 30 May 2018

Please cite this article as: Fanzi Zeng, Jisheng Xu, Yongfeng Li, Kang Li, Lei Jiao, Performance Analysis of Underlay Two-way Relay Cooperation in Cognitive Radio Networks with Energy Harvesting, *Computer Networks* (2018), doi: [10.1016/j.comnet.2018.05.023](https://doi.org/10.1016/j.comnet.2018.05.023)

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Performance Analysis of Underlay Two-way Relay Cooperation in Cognitive Radio Networks with Energy Harvesting

Fanzi Zeng^a, Jisheng Xu^{a,*}, Yongfeng Li^b, Kang Li^a, Lei Jiao^c

^aCollege of Information Science and Engineering, Hunan University, Changsha, 410012, China;

^bSchool of Engineering, Tibet University, Lhasa, 850000, China;

^cDepartment of Information and Communication Technology, University of Agder(UiA), N-4879, Grimstad, Norway.

Abstract

Cognitive radio and energy harvesting are two important approaches to solve the problem of spectrum scarcity and energy constraint in wireless communications. In this work, we study a two-way relay cooperation scheme in underlay cognitive radio networks (CRNs) with energy harvesting in which two secondary users exchange information via an energy harvesting relay node. Since the relay node collects energy from the received signals and utilizes it to forward the information, the secondary transmission power can be markedly reduced. Therefore the interference of the secondary network to the primary network can be substantially reduced. We derive the outage probability of the secondary network and analyze the ergodic sum-rate of the secondary network. For the relay selection scheme, we find the optimal relay by employing interior point method based on a penalty function. Numerical results show that the proposed scheme gives higher throughput for the secondary network than other strategies.

Keywords: underlay cognitive radio networks, two-way relay cooperation, energy harvesting, outage probability, relay selection.

2010 MSC: 00-01, 99-00

*Corresponding author: xujisheng19870713@126.com

Download English Version:

<https://daneshyari.com/en/article/6882613>

Download Persian Version:

<https://daneshyari.com/article/6882613>

[Daneshyari.com](https://daneshyari.com)