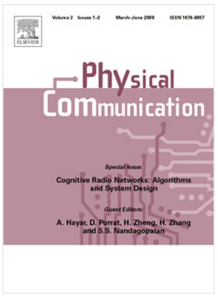

Switch-and-stay combining for energy harvesting relaying systems

Hai Huang, Junjuan Xia, Xin Liu, Zhenyu Na, Qinghai Yang, Hongbin Chen, Junhui Zhao

PII: S1874-4907(18)30021-1
DOI: https://doi.org/10.1016/j.phycom.2018.03.006
Reference: PHYCOM 508

To appear in: *Physical Communication*

Received date : 14 January 2018
Revised date : 11 March 2018
Accepted date : 13 March 2018

Please cite this article as: H. Huang, J. Xia, X. Liu, Z. Na, Q. Yang, H. Chen, J. Zhao, Switch-and-stay combining for energy harvesting relaying systems, *Physical Communication* (2018), https://doi.org/10.1016/j.phycom.2018.03.006

Switch-and-Stay Combining for Energy Harvesting Relaying Systems

Hai Huang[1], Junjuan Xia[2], Xin Liu[3], Zhenyu Na[4], Qinghai Yang[5], Hongbin Chen[6], and Junhui Zhao[7]

[1] *Department of Computer Science, Guangdong University of Education, China (e-mail:huanghai921@sina.com).*

[2] *School of Computer Science and Educational Software, Guangzhou University, China (e-mail: xiajunjuan@gzhu.edu.cn).*

[3] *School of Information and Communication Engineering, Dalian University of Technology, Dalian, China (e-mail:liuxinstar1984@dlut.edu.cn).*

[4] *School of Information Science and Technology, Dalian Maritime University, Dalian 116026, China (e-mail:nazhenyu@dlmu.edu.cn).*

[5] *State Key Laboratory on ISN, School of Telecommunications Engineering, Xidian University, Xi'an 710071, China, (e-mail:qhyang@xidian.edu.cn).*

[6] *Key Laboratory of Cognitive Radio and Information Processing, Guilin University of Electronic Technology, Guilin, China (email: chbscut@guet.edu.cn).*

[7] *School of Information Engineering, East China Jiaotong University, Nanchang, China (email: eeejhzhao@163.com).*

Abstract

In this paper, we study the switch-and-stay combining technique into the energy-harvesting relaying networks, where the relay obtains its transmit power from the source through wireless energy harvesting. The moderate shadow environments are applied, so that the data transmission from the source to the destination can go through the direct link. Although the conventional selection combining technique can exploit both the direct and relaying branches for data transmission, it has to require to know the channel parameters of both branches, and results into frequent branch switching. To solve these issues, switch-and-stay combining (SSC) is proposed into the energy-harvesting relay-

[1] J. Xia is the corresponding author of this paper. This work was supported by the Innovation Team Project of Guangdong Province University under Grant 2016KCXTD017, by the Foundation for Excellent Young Talents in Higher Education of Guangdong (No. 2015KQNCX109), and by the Research Fund for the Doctoral Program of Guangdong University of Education (No. 2016ARF04).