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Performance Evaluation of Spectrum Monitoring for Cognitive Radios in AWGN channel

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Abstract—In-band spectrum sensing protocols require that the secondary users periodically suspend their transmission periods and sense the channel in order to determine whether the primary user has emerged or not. Recently a new technique was introduced by the name of spectrum monitoring in which receiver statistics at the secondary user are used to detect the emergence of the primary user in the in-band channel. In this approach, referred to as spectrum monitoring, the secondary user does not need to suspend its transmission period in order to monitor the channel. This results in increased channel utilization for the secondary users and reduced detection delay for the primary users. In this talk I will present a new performance analysis of the spectrum monitoring technique in AWGN channel. The closed form formulas for channel utilization and detection delay using two Markov chain models will be presented. The limits of performance for a system using joint spectrum sensing/spectrum monitoring will be discussed and an optimization problem will be solved to maximize channel utilization with a constraint on detection delay.

Bio—Erfan Soltanmohammadi was born in Karaj, Iran, in 1984. He received the bachelor degree in electrical engineering from KNTU (Khaje Nasir University of Technology), Tehran Iran, in 2007 and the master degree from AUT (Amirkabir University of Technology), Tehran Iran, in 2010. He is a Graduate Research/Teaching Assistant and a Ph.D. candidate with the Department of Electrical and Computer Engineering, LSU. His research interests include cognitive radios, wireless sensor Networks.

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