Abstract: Three important and challenging issues that need to be addressed for wireless broadcast networks are reliability, security and stability. Although these issues have been separately studied for wireless networks in the literature, jointly considering the three issues has not yet been addressed in a well-defined framework yet. This perspective is now greatly facilitated by the physical layer approach to achieve security, which quantifies the measure of security and hence provides a natural framework to study security jointly with reliability and stability. In this talk, I will begin with an introduction of the basic ideas of physical layer security. I will then present our recent results on the joint design of scheduling and power control to achieve reliability, security and stability for wireless broadcast networks.

Bio: Yingbin Liang received the Ph.D. degree in Electrical Engineering from the University of Illinois at Urbana-Champaign in 2005. In 2005-2007, she was working as a postdoctoral research associate at Princeton University. In January 2008, she joined the Department of Electrical Engineering at the University of Hawaii as an assistant professor. Her research interests include information security, wireless communications and networks, and information theory. Dr. Liang was a Vodafone Fellow at the University of Illinois at Urbana-Champaign during 2003-2005, and received the Vodafone-U.S. Foundation Fellows Initiative Research Merit Award in 2005. She also received the M. E. Van Valkenburg Graduate Research Award from the ECE department, University of Illinois at Urbana-Champaign, in 2005.