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# Impact of Directional Antenna on Physical Layer Authentication



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**Abstract:**
Many existed physical layer based schemes have been proposed to enhance the traditional authentication in wireless networks. However earlier schemes did not discuss directional antenna issue, and lacked of real measurement based evaluation. In this paper, we take an insight into the threat of directional antenna on physical layer authentication by real measurement observation. We give a brief overview of the mainstream physical layer authentication schemes, and build a real-time experimental platform to collect the channel state information, and evaluate the performance of some mainstream schemes by collecting real data in different typical environments, especially in the situation when the attacker uses directional antenna. We show the physical layer authentication schemes are effective in most cases, but may fail to detect the third party attacker equipped with directional antenna. Based on our discovery, we suggest that directional antenna impact should be seriously considered in physical layer based applications, especially in security domain.

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third party attacker, directional antenna, physical layer authentication, wireless networks, channel state information

**Author Keywords**
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