Title: Interference Analysis, Measurements and Performance Evaluation of IEEE 802.11n in the presence of other IEEE 802.11b/g/n WLANs.

Speaker: Iman Ghaseminezhad Marandi
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Abstract: The IEEE 802.11n standard is a promising technology for near future Wireless LAN's. By utilizing enhanced techniques like MIMO communication and OFDM digital modulation, extremely high data rates over large distances are possible for wireless communications. Predecessors like 802.11a/b/g standards are successfully outnumbered and a strong competitor to other rising WLAN techniques e.g., UWB and Wimax is born.

With the rapid migration of 802.11n into WLAN a new scenario arises where 802.11n networks and other nearby located 802.11b/g/n networks operate simultaneously. Interference between the networks is inevitable causing performance degradation in such way that the promised maximum data rates and communication distances cannot be guaranteed. The objective of this thesis is to study these interference scenarios and gain a clear understanding of the consequences and effects of interference on the performance of the networks under consideration. In this regard, real life measurements are performed in office and home environments and an analysis has been carried out. Further, the analysis is compared to the results of the measurements. Our main focus will be on an 802.11n WLAN operating within the range of another 802.11b/g/n WLAN. We will observe the dramatic impact on the performance of the networks with respect to data rate and Bit Error Rate. Consequently, the results of our study will address the interference problem that the rapid growing WLANs are facing.