Séminaire ICI : Mylène Pischella

15 Février 2018, 14:00 – 15:30

Titre du séminaire et oratrice

Resource allocation for asynchronous D2D communications with Inter-Channel-Interference.

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Abstract

Device-to-device (D2D) communications can be established between two nearby mobile users that are directly exchanging data. Such direct communication has many advantages since it decreases latency, increases the data rate, and decreases power consumption due to low propagation loss. Moreover, the spectrum can be shared by several D2D pairs if they are far enough to assume that their mutual interference is negligible. However, efficient spectrum sharing and multiplexing requires relevant resource allocation in order to achieve the expected spectral efficiency gains. Interferences among D2D pairs can be assumed fully asynchronous and therefore generate Inter-Channel-Interference (ICI), whose spread and amplitude depends on the waveform chosen for multi-carrier modulation (OFDM, FBMC,…). In this context, we propose to optimize Resource Block (RB) allocation and power allocation, taking into accoun both ICI and the constraint that resource allocation should be performed at RB level, whereas ICI is applied at subcarrier level. RB allocation aims at maximizing the number of multiplexed D2D pairs, subject to a minimum Signal to Interference plus Noise (SINR) ratio per active RB. The objective of power allocation is then to maximize the weighted sum rate of D2D pairs, subject to a maximum interference threshold at the Base Station, since we consider an underlay D2D scenario.

Biography

Mylene Pischella has been an associate professor in telecommunications at CNAM since 2010. She received a Master's degree in engineering in 2002 and a Ph.D. in communications and electronics in 2009, both from TELECOM ParisTech. From 2002 to 2009, she was a research engineer at Orange Labs, where she specialized in the optimization of cellular networks and contributed to several European collaborative projects. In 2009–2010, she was an assistant professor at ISEP, Paris, France. Her research interests are resource allocation in wireless networks, including heterogeneous networks, device-to-device communications, multi-carrier modulation, and cognitive, cooperative, and relaying networks.