ERS POSITIONS AND INDIVIDUAL RESEARCH PROJECTS (IRP)

Fellow	Host institution	PhD enrolment	Duration
ESR2	UC3M	Y	*36 months*
Project Title: New Transmitter and Receiver Algorithms for mMIMO with Limited Channel State Information.			
Objectives: The goal of this project is to design algorithms for transmission and reception in massive MIMO systems where there is little or none Channel State Information (CSI) required in the transmitter side. They will be optimized to increase the spectral efficiency in a given cell even with low signal to noise ratio (SNR). These algorithms will be based in non-coherent processing (no CSI required at all), spatial modulation and/or antenna selection techniques (reduced CSI required), or combinations of the three. With this approach, the potential improvements in capacity and energy efficiency of massive MIMO can be leveraged without the need to estimate too many channels and the inherent pilot contamination problems that are today the bottleneck for the implementation of these systems are avoided.			
Expected Results: New algorithms contributing to increase the capacity and energy efficiency of future networks where small base stations may be equipped with a very large number of antennas. The achieved performance will be analysed by link-level simulations and a selected set of techniques will be prototyped for a proof of concept with a reduced number of antennas to keep complexity reduced.			
Enrolment in Doctoral degree(s): Universidad Carlos III de Madrid (UC3M)			
Main (host) supervisor/Contact: Dr. Ana Garcia Armada (UC3M)			