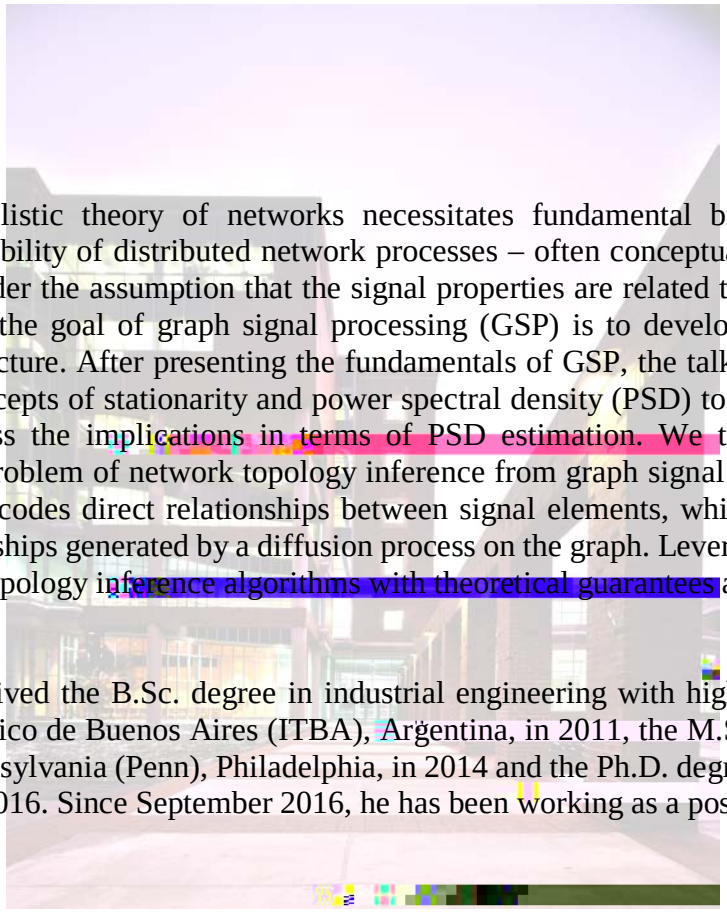
T

Wednesday, April 26th
12:00PM – 1:00PM
Computer Studies Building (CSB) 209



Abstract: Advancing a holistic theory of networks necessitates fundamental breakthroughs in modeling, identiýcation, and controllability of distributed network processes – often conceptualized as signals deýned on the vertices of a graph. Under the assumption that the signal properties are related to the topology of the graph where they are supported, the goal of graph signal processing (GSP) is to develop algorithms that fruitfully leverage this relational structure. After presenting the fundamentals of GSP, the talk will have a twofold focus. We first generalize the concepts of stationarity and power spectral density (PSD) to signals defined in irregular graph domains, and discuss the implications in terms of PSD estimation. We then leverage the proposed definitions to address the problem of network topology inference from graph signal observations. It is assumed that the unknown graph encodes direct relationships between signal elements, which we aim to recover from observable indirect relationships generated by a diffusion process on the graph. Leveraging results from GSP and sparse recovery, efficient topology inference algorithms with theoretical guarantees are put forth and tested with synthetic and real data.

Bio: Santiago Segarra received the B.Sc. degree in industrial engineering with highest honors (Valedictorian) from the Instituto Tecnológico de Buenos Aires (ITBA), Argentina, in 2011, the M.Sc. in electrical engineering from the University of Pennsylvania (Penn), Philadelphia, in 2014 and the Ph.D. degree in electrical and systems engineering from Penn in 2016. Since September 2016, he has been working as a postdoctoral research-13 TJ 0.006 Tc