Handling Interference using Distributed Cooperation

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Abstract: Pushed by the demand for bandwidth-hungry multimedia and internet-related wireless services, communication engineers seek to maximally exploit the spectral resources in all available dimensions, generating massive amounts of interference in the process.

A crucial approach to handling interference lies in the notion of network coordination and cooperation which can take place between otherwise competing nodes in the networks (terminals, relays, base stations etc.)

Coordination can take place in a variety of domains such as resource control, scheduling, beam forming, power control, etc., and poses both new theoretical and practical challenges. In this talk we present the essence of such techniques and emphasize the fundamental trade-off between coordination and information exchange. We show the importance of this problem in future dense high capacity wireless networks. We make connections with the intriguing mathematical field of team decision theory.