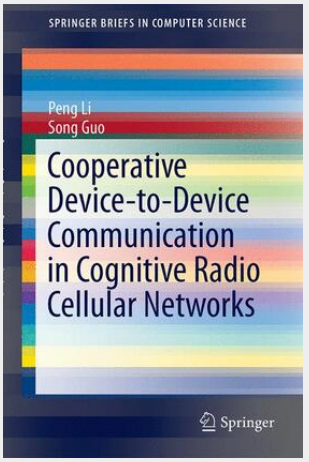
Guo / Li

Cooperative Device-to-Device Communication in Cognitive Radio Cellular Networks



This brief examines current research on cooperative device-to-device (D2D) communication as an enhanced offloading technology to improve the performance of cognitive radio cellular networks. By providing an extensive review of recent advances in D2D communication, the authors demonstrate that the quality of D2D links significantly affects offloading performance in cellular networks, which motivates the design of cooperative D2D communication. After presenting the architecture of cooperative D2D communication, the challenges of capacity maximization and energy efficiency are addressed by optimizing relay assignment, power control and resource allocation. Furthermore, cooperative D2D communication is enhanced by network coding technology, and then is extended for broadcast sessions. Along with detailed problem formulation and hardness analysis, fast algorithms are developed by exploiting problem-specific characteristics such that they can be applied in practice.

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