Notice of dissertation defense 28.08.2018

Cost-Effective 5G Cellular Systems with Millimeter-Wave Communication and Device-to-Device Relaying Technologies

Title Millimeter-Wave Communication and Mobile Relaying in 5G Cellular Networks

Content To realize a fully mobile and connected society, research and standardization for the 5G wireless systems are currently being carried out by the mobile industry, academic institutions and standards-making bodies. Millimeter-wave (mmWave) communications, combined with massive multiple-input multiple-output and beamforming techniques, provides a framework to achieve throughput in the range of Gbps in 5G era. However, mmWave signals are susceptible to the blockage effects due to the short radio frequency wavelengths. To achieve both high throughput and consistent experience for mobile users, mmWave base stations will need to be densely deployed and the cost will be high. To lower the deployment cost, device-to-device (D2D) relaying based on cooperation between mobile users can be applied to extend the network coverage. Motivated by the importance of mmWave communication and D2D relaying in fulfilling the 5G objectives, this thesis addresses related important problems including relay selection, radio resource allocation, cellular power control, and interference management for D2D relaying in practical 5G network scenarios.

Field of research Information Theory


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Place Aalto University, (former TUAS building), Hall AS2, Maarintie 8, Espoo

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