SolarTech Power Solutions

Cellular network base station communication distance

Overview

Why are base stations important in cellular communication?

Base stations are important in the cellular communication as it facilitate seamless communication between mobile devices and the network communication. The demand for efficient data transmission are increased as we are advancing towards new technologies such as 5G and other data intensive applications.

Are base stations positioned randomly in a cellular network?

Consider a downlink cellular network consisting of base stations (BSs) and mobile users (MUs). Many previous studies on cellular networks assumed that BSs are positioned regu-larly. However, in reality, it is not true and there are some random characteristics.

Does cellular network capacity increase with base station density?

A key observation in is that the area outage probability is independent of the base station density in interference limited cellular networks. This means that the network capacity linearly increases with the base station density. However, the result can be achieved under a assumption that every cell has saturated traffic.

How can cellular network capacity be improved?

The capacity of cellular networks has been a classical and important issue for efficient radio resource management . The most improvement of the network capacity has come from reducing the cell size by installing more base stations such as femtocells , .

How does network capacity increase as we install more base stations?

The most improvement of the network capacity has come from reducing the cell size by installing more base stations such as femtocells , . We may have a question, “How much does the network capacity increase as we install more

base stations?

”.

Can cellular networks be modeled as a Poisson point process (PPP)?

This regular model tends to overestimate the capacity of cellular networks owing to the perfect geometry of base stations and the neglect of weak interference from outer tier base stations. For this reason, we use the stochastic geometry approach, where base stations can be modeled as a homogeneous Poisson point process (PPP) -.

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