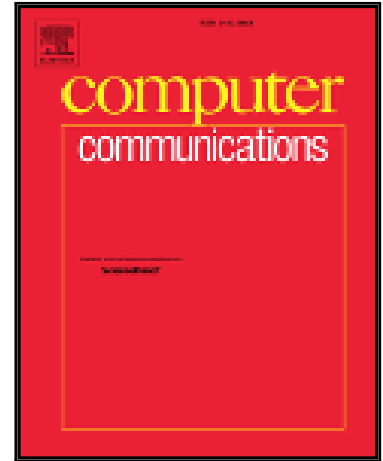


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Energy-Aware Interference Management for Ultra-Dense Multi-Tier HetNets: Architecture and Technologies

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Abstract

In order to improve spectral efficiency in future ultra-dense heterogeneous networks (HetNets), small cells and macro cells should be ultra-dense when deployed and dynamically overlaid. In this condition, overlaid deployment, state transition, and load migration will cause energy consumption and complex interference. Managing interference in ultra-dense multi-tier HetNets is challenging; interference can burden the network significantly when network conditions change over time. Because of the distribution of small cells and overload conditions in these ultra-dense networks, we must take into account the interference relationship among the base stations and distribution and loading conditions. An interference management scheme based on energy-aware architecture is proposed for ultra-dense multi-tier HetNets in this article. A survey is presented on energy-aware scheduling algorithms. We aim to study energy efficiency issues using graph theory and clustering. HetNets are divided into numerous interference areas, which correspond to coverage areas of each base station. Any conflict among users resources depends on if the interference user is located in a base station interference area, hence the use of a reinforcement-learning algorithm to optimize ongoing interference management. Given the complexity of

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