A Novel Approach to Optimal Resource Allocation in HETnets Based on the CINR Requested by Users

Author(s) - Institution(s):
Andres, Navarro, icesi
Alvaro, Pachon, icesi
Ubaldo, Garcia, UVigo

Corresponding author email: anavarro@icesi.edu.co

Corresponding WG group: TWGU, WG3

Abstract:

This paper presents an approach for solving the resource allocation problem in heterogeneous networks (HETnets). An optimization model is formulated whose main objective is to achieve the best Quality of Service (QoS) measured by the Carrier to Interference Noise Ratio (CINR). This model is a quadratically constrained optimization problem with continuous and Boolean variables. It is solved by an approximation by a sequence of linear optimization problems and a judicious allocation of frequency blocks. It attempts to satisfy the CINR values required by users and demanded by modern standards in data transmissi on. Theoretically, the model can detect when the system cannot fulfill the CINR required, in which case, its solution offers the service provider an allocation of resources that yields a good index of performance. This is reported in numerical simulations that resemble real scenarios of HETnets. The approach configures, in a flexible way, the exploration of the search space, the strategy of frequency block allocation to users, and the solution considered as acceptable by the service provider.