



## Dimensioning, Cell Site Planning, and Self-Organization of 4G Radio Networks

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Shaker Verlag Okt 2013, 2013. Taschenbuch. Condition: Neu. Neuware - This thesis contributes to multiple stages along the typical lifecycle of broadband wireless networks by introducing novel concepts, models, and algorithms for the dimensioning, the planning, and the self-organized operation of 4G radio networks. First, the key components for wireless network modeling are introduced. Using path loss information as input, we show how the required bandwidth for data transmission can be computed via the discrete rate-power function that is given by the system link budget. Since the spectrum in OFDMA multi-cell networks is shared and limited, all developed optimization models are subject to an underlying multiple knapsack problem if the users expect a minimum quality-of-service and the corresponding rate demand exceeds the load limit of single cells. We consider multihop WiMAX networks and determine the infrastructure dimensioning with respect to the expected user distribution and rate demand. The related optimization problem is formalized as a mixed-integer linear program that covers all relevant technical system aspects. We show how an economical perspective can help to find a closed-form representation for conflicting objectives like the trade-off alignment between network coverage, network capacity, and deployment cost. Compared to the dimensioning approach, accurate cell...



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