

数学与系统科学研究院

计算数学所学术报告

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报告题目:

**Economically Optimal MS  
Association for Multimedia Content  
Delivery in Cache-Enabled  
Heterogeneous Cloud Radio Access  
Networks**

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下午 15:00-16:00

报告地点: 科技综合楼三层

311 报告厅

## **Abstract:**

In cache-enabled heterogeneous cloud radio access networks (HC-RANs), mobile station (MS) association for multimedia content delivery should consider both the content caching location and the wireless channel quality. This paper studies economically optimal MS association to tradeoff the cache-hit ratio and the ratio of MSs with satisfied quality of service (QoS). When the associated enhanced remote radio unit (eRRU) stores the requesting content, the content can be fetched directly from the local cache. Otherwise, fronthaul has to be used to fetch the content. The use of fronthaul resource and cache is treated as costs, and payments of QoS-satisfied MSs are treated as incomes. Thus, the economic MS association is formulated as an optimization problem to maximize the system utility, i.e., total profit of the network operator, which is defined as the difference between incomes and costs. A belief propagation-based method is employed to solve the problem on a developed factor graph. Simulation results show that the proposed economically optimal MS association achieves much higher profit than the existing schemes and works well in the network with various loads. Moreover, the profit of the proposed scheme can be improved with inter-cell interference coordination. For the case with extremely skewed content popularity, the proposed scheme can avoid MS overloading at eRRUs storing most popular multimedia contents. Furthermore, it can support more MSs with satisfied QoS, which leads to a higher profit.

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