

**VELOCITY-AWARE HANDOVER MANAGEMENT  
IN TWO-TIER CELLULAR NETWORKS**

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# ABSTRACT

- While network densification is considered an important solution to cater the ever-increasing capacity demand, its effect on the handover (HO) rate is overlooked. In dense 5G networks, HO delays may neutralize or even negate the gains offered by network densification. Hence, user mobility imposes a nontrivial challenge to harvest capacity gains via network densification.
- In this paper, we propose a velocity aware HO management scheme for two-tier downlink cellular network to mitigate the HO effect on the foreseen densification throughput gains.



## CONT...

- The proposed HO scheme sacrifices the best base station (BS) connectivity, by skipping HO to some BSs along the user trajectory, to maintain longer connection durations and reduce HO rates. Furthermore, the proposed scheme enables cooperative BS service and strongest interference cancellation to compensate for skipping the best connectivity.
- To this end, we consider different HO skipping scenarios and develop a velocity aware mathematical model, via stochastic geometry, to quantify the performance of the proposed HO schemes in terms of the coverage probability and user throughput. The results highlight the HO rate problem in dense cellular environments and show the importance of the proposed HO schemes. Finally, the value of BS cooperation along with handover skipping is quantified for different user mobility profiles.



## EXISTING SYSTEM

- Using stochastic geometry, the handover rate in cellular networks is characterized for a single tier cellular network with the random waypoint mobility model for a multi-tier cellular network with an arbitrary mobility model.
- However, focus only on the HO rate and do not investigate the effect of HO on the throughput. Stochastic geometry models that incorporate handover effect into throughput analysis can be found.



# PROPOSED SYSTEM

- In this paper, we propose a simple yet effective velocity aware handover management scheme in a two-tier cellular network that is compatible with the current cellular architecture.
- The proposed scheme, denoted as HO skipping, bypasses association with some BSs along the user trajectory to maintain a longer service duration with serving BSs and reduce the HO rate and its associated signaling.



# HARDWARE REQUIREMENTS

- Processor - Pentium-IV
- Speed - 1.1 Ghz
- RAM - 256MB(min)
- Hard Disk - 20 GB
- Key Board - Standard Windows Keyboard
- Mouse - Two or Three Button Mouse
- Monitor - SVGA

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## SOFTWARE REQUIREMENTS

- Tool - Network Simulator-2
- Operating system - LINUX
- Front end - OTCL (Object Oriented Tool Command Language)



# REFERENCES

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- [2] X. Ge, S. Tu, G. Mao, C.-X. Wang, and T. Han, “5G Ultra-Dense cellular networks,” IEEE Wireless Communications, vol. 23, no. 1, pp. 72–79, 2016.
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