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SegHyPer: Segmentation- and Hypothesis based Network Performance Evaluation for High Speed Train Users

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Abstract—Two solutions are presented to overcome the coverage and low bit rate problems for cellular network services in high mobility: amplify-and-forward Moving Relay Nodes (MRNs) and prototypical windows on-board Wi-Fi enabled High Speed Trains (HSTs). This paper focuses on 3G/4G User Equipments (UEs) located on-board the high Vehicular Penetration Loss (VPL) vehicles travelling throughout long range geographical routes. This work is supported by extensive real-world measurements conducted along Austrian railways such as from Vienna to Salzburg and from Vienna to Graz. We propose a novelistic approach established by multi-level non-parametric hypotheses tests based on route segmentation link quality parameters to enable micro-analysis in current and future cellular networks for mobile users on-board railjet HST with- and without treatment.

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