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Wide Band Propagation in Train-to-Train Scenarios

- Measurement Campaign and First Results

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Abstract—Within the next decades the railway systems will change to fully autonomous high speed trains (HSTs). An increase in efficiency and safety and a reduction of costs would go hand in hand. Today's centralized railway management system and established regulations can not cope with trains driving within the absolute braking distance as it would be necessary for electronic coupling or platooning maneuvers. Hence, to ensure safety and reliability, new applications and changes in the train control and management are necessary. Such changes demand new reliable control communication links between train-to-train (T2T) and future developments on train-to-ground (T2G). T2G will be covered by long term evolution-railway (LTE-R) which shall replace today's global system for mobile communications-railway (GSM-R). The decentralized T2T communication is hardly investigated and no technology has been selected. This publication focuses on the wide band propagation for T2T scenarios and describes an extensive channel sounding measurement campaign with two HSTs. First results of T2T communication at high speed conditions in different environments are presented.

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