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Simulation and Testing of a Wheelset with Induction Motor Driven Independent Wheels

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Independently rotating wheels (IRW) for railway vehicles have been under serious consideration at a theoretical and experimental level for many years. This paper presents dynamic and control simulations of a rail vehicle wheelset with induction motors for independently rotating wheels. Simulation models have been developed for both the mechanical and electrical aspects of the system. The simulation and experimental results have demonstrated that the proposed control strategy has good dynamic performance in term of response time and controllability. A test implementation on a 1/5 scale roller rig has validated the simulation results and shown that good stabilization can be achieved by the proposed wheel motor driven configuration.

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