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Propagation of Harmonics of Return Traction

Current in Rail lines

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***Abstract*—An investigation of propagation of return traction current harmonics in rail lines was carried out for railway sections with d. c. and a. c. traction. A mathematic model of traction supply net was proposed. The improved mathematical model of traction supply net allows us to estimate the propagation of harmonics and traction return current along the feeder zone with different kind of power supply system. The impedance of a power network wasdetermined for low frequency interferences of return traction current. Also this paper deals with the determination of spectrum composition of traction current and most dangerous harmonics for track circuits.**

***Keywords*—harmonics; electromagnetic interference (EMI); immunity; traction current; track circuit (TC); railway system; failure**

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