

Influence of track irregularities in the catenary-pantograph dynamic interaction

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Abstract-

This paper presents an advanced pantograph-catenary-vehicle-track model, which allows us to analyze the vertical dynamics of the complete system. The developed model is able to evaluate the displacements and the contact force generated in the catenary-pantograph as well as the wheel-track interactions. Nevertheless, this paper focuses on the possible influence of track irregularities on the catenary- pantograph dynamic interaction. From a power spectral density function of the track irregularities, 180 track profiles and their respective catenary - pantograph - vehicle - track simulations have been generated. The wide range of results allows us to obtain some conclusions about the influence of the track profile in the catenary - pantograph behavior.

Index Terms-

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