

Field investigation on load distribution and deflections of railway track sleepers

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Despite the significant role of sleepers in railway track mechanical behavior, no thorough mechanistic approach has been presented for the development of the loading pattern they experience. The current theoretical methods in the analysis of the railway track system need further calibration and verification using field-measured data. In this paper, using specific load-cells between sleepers and the rail and beneath the sleepers, the vertical loading conditions of these main track elements are studied. The lateral resistance of the concrete sleepers in the ballasted tracks is investigated by using full scale sleeper pull-out tests. Moreover, track deflections under the sleeper as the main track analysis parameter are measured and the results are discussed. In this paper, with the results obtained from extensive field measurements, some suggestions are made leading to an improvement in the current understanding of the sleeper loading pattern and the track deflections