Application of ۲D-infinite beam elements in dynamic analysis of train-track interaction

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High-speed railway tracks require high quality track and accurate maintenance, but rail irregularities in main lines are inevitable. These irregularities are important sources for dynamic excitation. For the safety of trains at higher speed, the size of irregularities must be limited. In this paper, according to the Railways Standards, the wheel load reduction (WLR) ratio is introduced. Based on this ratio, the limitation for rail irregularity size is presented. Dynamic responses of track due to "V" shaped irregularity and rail corrugation is treated. A case study of rail corrugation is presented by real data measured from the Northeast district of Iranian railways.