

Influence of High-speed Train Running on Fatigue Performance of Structure

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The dynamic response of railway bridges is just a problem of the resonant response of girders that are subject to constant periodical exaitation by running trains. In general, this phenomenon is referred to as “the speed effect of multiple-axle moving loads” . In this study, the influence of high-speed train running on fatigue amplitude and equivalent number of cycles was examined by numerical analysis and measurement. Based on the results of the analysis, we clarified that the dynamic amplitude to be adopted in fatigue design becomes 1.2 to 2.0 times larger than the static one at resonance speed of girder, and equivalent number of cycles increases on girders of over 25m span length. In addition, we showed by measurement that the dynamic amplitude becomes 1.1 to 1.7 times larger than the static one.