Evaluation of Damping Properties of Railway Structures by using Two Vibration Measurement Methods

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There is no adequate evaluation method of damping properties because there are only a few measurement examples for damping properties and the occurrence factors of damping are very complex. In this study, we measured the damping constants and the natural periods of railway structures of various structural types and in various ground conditions by using vibration measurement methods. As a result, we can notice that the natural period and the damping constant are inversely proportional to each other. Furthermore there is a positive correlation between the damping constant and the amplitude ratio of the upper side to the lower side of the structure, and it seems that the damping constant of the whole structure is determined by the weight of structural damping constant and ground's one.