

**Parameter Updating of an Analytical Model for Three-Dimensional Flexural Vibrations of
Carbody by Using Measured Data**

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This report proposes a method to construct well-suited numerical models for complicated three-dimensional flexural vibrations of railway vehicle carbodies by updating model parameters using a genetic algorithm (GA) together with measured data. The frequency response functions (FRFs) at several points on the carbody are used to evaluate agreement between calculation and measurement results, and the updating process of the model parameters is performed automatically using an ordinary personal computer within a reasonable CPU time. By considering the FRFs at the points on the roof together with those on the floor, appropriate model parameters can be obtained both for FRFs and modal characteristics. Two different vehicle cases, a commuter type vehicle and a Shinkansen vehicle, are examined in order to evaluate the effectiveness of the method. Good agreements between measurement and calculation results are observed and the validity of the proposed method is confirmed.