Experiments and Simulations of Guiding 1/10 Scale Model Vehicle by Guard Fence

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It is conceivable that a moving railroad vehicle might collide with a structure when the train derails because of a natural disaster. However, the dynamic behaviors of the vehicle and the structure have not been well examined so far from the viewpoint of the collision of the vehicle with the structure. Hence the authors conducted model experiments using a 1 to 10 scale model vehicle and obtained the data of its motions and acting forces. In the experiments, the lateral side of the model vehicle was deliberately contacted with a side wall. The authors also developed a numerical simulation program to simulate this experiment and compared the results of the experiments with the simulations. Our numerical results have shown a good coincidence with the experimental results in terms of the lateral acceleration of the vehicle and the contacting force between the vehicle and the side wall.