

**A Method for Improving the Adaptation Rate of Control Parameters for Active
Control Pantographs**

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For the improvement in speed, many problems have to be solved for the current collection system. Not only the aeroacoustic noise of a pantograph but also the contact force fluctuation between a pantograph and the contact wire has to be reduced. Therefore, using the pantograph with active control techniques is an effective approach to the reduction in the contact force fluctuation. The authors have been working on the development of feed-forward control technique for reducing the contact force fluctuation, based on the information about support spans and train running speed. The idea of the approach is to control the magnitude and phase lag of the control force acting on the pantograph frame, and the control force works after the controller finds the optimal magnitude and phase lag. The problem of this approach, however, is that it requires long time for finding two optimal parameters. This study proposes the better approach than the utilized steepest descent method in terms of parameters convergence speed.