

Method to Evaluate Structure of Low-Frequency Aeroacoustic Noise Source Generated by Shinkansen Pantograph

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For further speed-up of Shinkansen, reduction of aeroacoustic noise generated by a pantograph has been an important subject of discussion. In particular, a panhead significantly influences the aeroacoustic characteristics of the pantograph. It is possible to evaluate a low-frequency aeroacoustic noise generated by the panhead by using Howe's vortex sound theory from flow field quantities obtained by numerical simulation. This paper describes the method to evaluate contributions of the low-frequency aeroacoustic noise sources around the panhead toward the noise observed at the far field. Visualizing the contributions of the noise sources around the panhead can show the aeroacoustic noise source structure around the panhead in the low-frequency domain.