

Identification of Aerodynamic Pressure Fluctuation Generated from Trains

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It is known that pressure fluctuations including infrasound are radiated from intermediate vehicles of Shinkansen trains. Previous studies have shown that infrasound consists of the aerodynamic and structure-borne components, and the aerodynamic component is originated in high-speed airflow around vehicles. The mechanism of generating the aerodynamic component, however, has been remained unclear. In this paper, a new methodology applicable to railway field tests is proposed to evaluate low-frequency aerodynamic sound less than 100 Hz. More than 100 trains were measured and ensemble-averaged, and it was shown that low-frequency aerodynamic sound was locally distributed along each whole section between two adjacent bogies and pantograph sections.