

Numerical simulation the aerodynamic characteristics of high speed maglev train and guideway under crosswinds

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ABSTRACT

With the development of high speed maglev train, the maximum vehicle speed is up to 603km/h. The aerodynamic characteristics of guideway and train are important load in the design of maglev transportation. To investigate the aerodynamic characteristics of guideway and maglev train, the numerical simulation method is applied to calculate the aerodynamic characteristic of guideway based on SMT(Shanghai Maglev Train). The multiple rotating reference (MRF) method is used to simulate the relative motion between train and guideway, and the numerical model is verified from several aspects. The effects of wind speed and vehicle speed on aerodynamic characteristic of the head, middle, and tail vehicles are discussed. The results show that the aerodynamics force of maglev train and guideway are increased with increasing of vehicle speed and lateral wind speed.

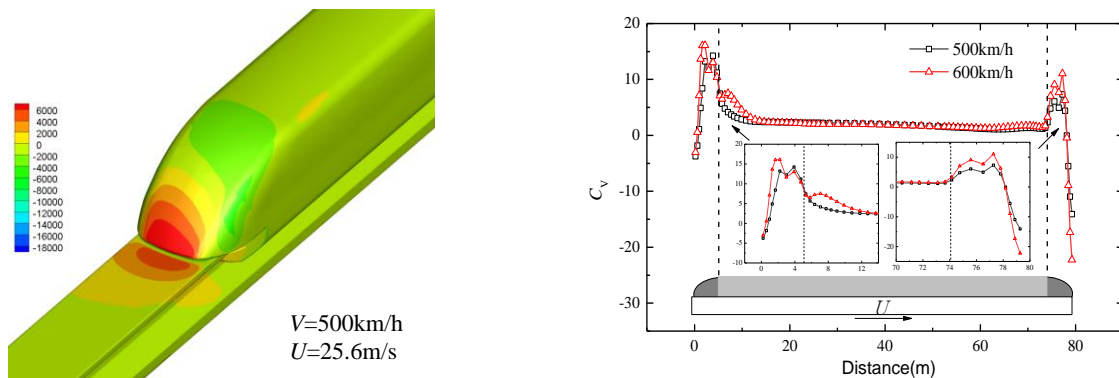


Fig.1 Pressure distribution and lift coefficient of maglev train under crosswind

REFERENCES

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