

**A Method for Evaluating the Safety of a Railway Vehicle  
under Strong Winds in Consideration of Wind Directions**

Keiji ARAKI    Saki TANIMOTO    Takaaki FUKUHARA

We propose using the probabilities of strong wind occurrence according to wind directions for evaluating the safety of a train under strong winds. The probabilities  $P_x$  of the occurrence of strong winds exceeding the critical wind speeds for overturning were estimated for a train in a virtual railway section by using Weibull coefficients  $c_d$  and  $k_d$  according to 16 wind directions calculated on the basis of wind data observed at a windy AMeDAS station.  $P_x$  values were found to be variable from  $6.2 \times 10^{-6}$  to  $8.6 \times 10^{-5}$  depending on the angle between the traveling direction of the train and each wind direction. These values of  $P_x$  range from 1.4% to 20% of the value of  $P$ , which was calculated by excluding strong wind occurrence according to wind directions.