

**Development of Quasi-static Curve Negotiation Analysis Procedure  
Considering Hysteretic Behavior of Air Suspension System**

Takayuki TANAKA      Hiroyuki SUGIYAMA

While air suspensions are widely utilized for railway vehicles as secondary suspension, its hysteretic behavior possibly gives a non-negligible influence on the vehicle running characteristics such as wheel load. To enable accurate and quick prediction of such influence, this study proposes a new quasi-static curve negotiation analysis procedure using a thermodynamic air suspension system model that expresses in detail the nonlinear airflow characteristics. This approach allows for eliminating a limitation of existing full dynamic simulation models associated with high computational intensity, so that quick evaluation is conducted in the case of a simulation assuming a long-distance travelling.