

Modeling of Tire Properties for Vehicle Dynamics Analysis

Aim

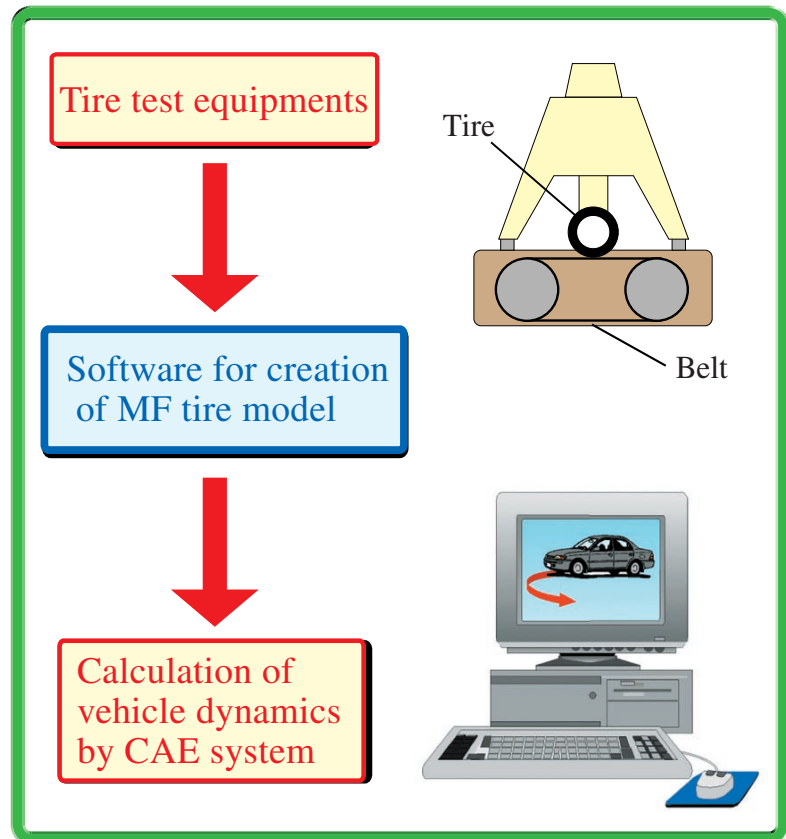
To develop a tire model with high accuracy, which is indispensable for calculating vehicle dynamic behavior (running, turning, stopping), to increase efficiency and reduce the time required for vehicle development.

Method

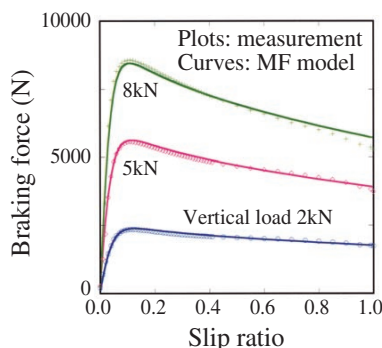
- Create a practical tire model using various measured data, based on a tire model called Magic Formula (MF).

Characteristics

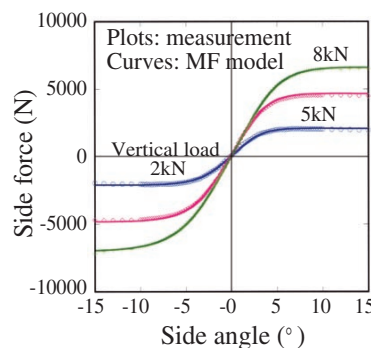
- Possible to create MF tire model using simple computer operations
- New methods drastically reduce (1/2–1/5) errors in modeling
- Possible to create side force model using measured data of vehicles running on actual roads



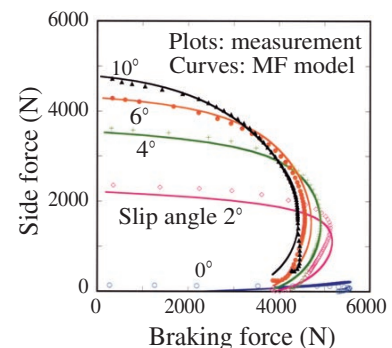
Procedures and application of tire modeling



Braking force characteristics vs. Slip ratio



Slid force characteristics vs. Slip angle



Combined slip characteristics