

## MEASURED FORCE-CREEPAGE RELATIONSHIPS AND THEIR USE IN VEHICLE RESPONSE CALCULATIONS

Results of an extensive series of full-scale tests on British Rail track to establish the range and distribution of creep coefficients that occur in practice between wheel and rail is presented. The work covers both longitudinal and lateral coefficients, and their variation with rail contaminant, wheel load and speed. Results of a survey of longitudinal coefficients over a 12-month period show that the distribution of coefficients is very similar to that predicted theoretically due to variation in rail head profile. The coefficients are thus shown to vary little from the full theoretical values except where the coefficient of friction falls below 0.15 when substantial reductions occur. However these occurrences of low friction are shown to be very rare.

Application of these results to linear analysis techniques is considered, and it is shown that the single most important factor for improving the present linear prediction methods is the inclusion of the effect of spin creepage on the longitudinal and to a lesser extent the lateral coefficients. Use of these corrected values in the linear method improves agreement in the critical high creep high conicity case with more accurate non-linear calculations. It is shown that the non-linear effect on a creep curve due to limiting friction is only likely to be of any significance in conditions of low wheel load, low coefficient of friction and rough track.