

## THE CALCULATION OF TRACK FORCES DUE TO DIPPED RAIL JOINTS, WHEEL-FLATS AND RAIL WELDS

The dynamic loading of railway track in the vertical direction occurs over a wide range of frequencies. At low frequencies the loading is due almost entirely to variations in suspension forces caused by vehicle body and bogie motions. These motions are governed mainly by the vehicle parameters and the track system has a relatively small effect upon the force levels produced, although the motions may originate from vertical irregularities in the running surface of the track. At higher frequencies, however, the track system plays a significant part in determining force levels and usually only the unsprung parts of the vehicle (the wheelset and traction motor) influence these force levels.

The method of analysis and program described has been developed to calculate these high frequency effects. The most severe loadings experienced by the track at these frequencies are of a transient nature since they arise from isolated irregularities on either side of the track or wheel. The three irregularities so far considered have been the dipped rail joint, the raised rail weld and the vehicle with a wheel-flat.