

ABSTRACT

A driving cycle is a speed-time profile that reflects the typical driving behaviour when a vehicle is driven under certain conditions. These conditions include the type of road on which the vehicle is driven, the type of vehicle used, the traffic conditions at the time of driving, nature of the driver (whether calm, normal or aggressive) and the weather conditions. These are the contributing variables which define a typical driving cycle and any change in these variables will give rise to a different driving cycle. In this thesis, an attempt is made to figure out the best tool which can be used to decompose a driving cycle into its constituent waves and to see if these waves can be related to the contributing variables. Fourier transform, Short-time Fourier transform and Empirical mode decomposition are the decomposition tools considered here.

Analysis shows that for a typical driving cycle which contains many finite signals of different durations cannot be clearly decomposed using any of the three methods used here. A possible way out could be the use of wavelet analysis. Also due to the COVID-19 restrictions data collection was severely hampered and this led to an incomplete investigation of the problem.