

Effect of thermal stratification on MHD free convection with heat and mass transfer over an unsteady stretching surface with heat source, hall current and chemical reaction

Abstract :

Time headway data generated from different rain conditions were fitted to probability distributions to see which ones best described the trends in headway behaviour in wet weather. Data was generated from the J5, a principal road in Johor Bahru for two months and the headways in no-rain condition were analysed and compared to the rain generated headway data. The results showed a decrease in headways between no-rain and the rain conditions. Further decreases were observed with increase in rainfall intensity. Thus between no-rain to light rain condition there was 15.66% reduction in the mean headways. Also the mean headway reduction between no-rain and medium rain condition is 19.97% while the reduction between no-rain and heavy rain condition is 25.65%. This trend is already acknowledged in the literature. The Burr probability distribution ranked first amongst five others in describing the trends in headway behaviour during rainfall. It passed the goodness of fit tests for the K-S, A2 and C-S at 95% and 99 % respectively. The scale parameter of the Burr model and the P-value increased as the rain intensity increased. This suggests more vehicular cluster during rainfall with the probability of this occurring increasing with more rain intensity. The coefficient of variation and Skewness also pointed towards increase in vehicle cluster. The Burr Probability Distribution therefore can be applied to model headways in rain and no-rain weather conditions among others.