

## ABSTRACT

Urban transportation issues arise when existing transportation networks are unable to meet the demands of urban mobility. Urban productivity is influenced by the transportation system's capacity to transfer people and things between origins and destinations. In networks of arterial roads, intersections are critical locations that leads to congestion and delay. Installation of effective control mechanism, such as traffic signals are essential for reducing accidents and delays for improving the traffic flow.

Vehicles move in the form of platoons after discharging from the stop line of a signalized intersection. Due to the interaction of moving vehicles, road layout, traffic composition, and their varying speeds, platoons disperse as they approach the downstream signal. The pattern of platoon dispersion plays a vital role in the modelling and study of traffic flow in urban traffic corridor. In heterogeneous traffic conditions there are different factors which influences the platoon dispersion behaviour. These factors need to be properly studied for the better planning and management of the traffic systems. Coordinated signals are designed in a such a way that the platoon discharged from upstream intersection will get continuous green time as they reach the downstream intersection. For this reason, study of platoon dispersion plays a significant role in traffic engineering and management.

Present study was carried out to investigates the pattern of dispersion of platoon in an urban signalized corridor. The value of critical inter arrival time for separating two consecutive platoon is identified from the field data. Along with this performance characteristics of platooned vehicles downstream the intersection is also studied in this work. Models are formulated to identify the effect of platoon characteristics on platoon dispersion. It is identified that increase of percentage composition motorized two wheelers (2W) decrease the platoon dispersion distance compared to passenger cars. Increase of three wheelers (3W), light commercial vehicles (LCV) and heavy commercial vehicle (HCV) increase the dispersion distance compared to passenger cars. Dispersion distance increase with the increase of platoon size. This research will give a better understanding of platoon dispersion behavior in heterogeneous traffic condition to enhance the realism in traffic flow modelling.

**Keywords:** *platoon dispersion, signalized intersection, vehicle composition, heterogeneous traffic*