

號誌化平面路口對向直行左轉車輛安全通行之研究

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摘要

綠色燈號下允許車輛左轉運行之號誌化路口，對向直行左轉車輛間並未因路口號誌化而消除潛在碰撞之交通衝突與行車動線之相互干擾。鑑於台灣都市地區路口對向直行左轉車輛常遭受對向車輛不當駕駛行為干擾，因而道路交通主管機關曾針對路口對向直行左轉相關道路交通法規可能產生之對向直行左轉路權判斷不易、路口中心處不易區分、間接鼓勵路口轉彎車加速左轉等問題提出檢討之修正意見，唯整體考量仍缺少“量化”分析，係一值得研究之課題，因此，本研究將針對號誌化平面路口對向直行左轉車輛安全通行問題於法規層面上之特殊性，以交通衝突理論、路權理論為基礎，並考量路口寬度、路口型式、路口中心處、車輛尺寸、轉彎半徑、運行軌跡、行駛速率、行車位置、最終碰撞型態、道路交角等因素，先行推導車輛行駛軌跡座標公式，再利用情境模擬分析法，進行號誌化平面路口對向直行左轉車輛安全通行分析，分析過程中則納入衝突臨界速率與安全通行期望次數理念，並根據路口對向左轉車輛安全通行軌跡、速率集中分佈範圍之分析結果及相關理論，研擬號誌化路口對向左轉車輛安全通行軌跡、速率，及對向直行左轉車輛路權判斷原則，以供駕駛者路口直行左轉安全通行之參考。此外，本研究情境模擬與不同狀況下之左轉車輛安全通行探討，亦可作為未來路口對向直行左轉之相關道路交通法規之“量化”分析參考。

關鍵詞：號誌化平面路口、對向直行左轉車輛、安全通行

The Study on Safe Passage of Oncoming Straight and Left-Turn Vehicles for At-Grade Signalized Intersections

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Abstract

Mutual disturbances of these paths of oncoming straight and left-turn vehicles will still exist for signalized intersections that allow vehicles turning left at green signal. Because of inappropriate operation between oncoming straight and left-turn vehicles of signalized intersections of urban areas in Taiwan the department of traffic ever offered corrigible opinions involve in right of way, center of intersections adjudging hard and indirectly encouraged to accelerate left-turn vehicles. But all still lack quantification analysis. Therefore, this problem is worth studying.

This study will aim at safe passage of oncoming straight and left-turn vehicles for at-grade signalized intersections. So, this study will be based on row's theory, theory of traffic conflicts, and take many factors into consideration, such as the width of the intersections, types of the intersections, center of the intersections, the size of the vehicles, the location of the vehicles, the radius of turn, paths of operation, the speed of the vehicles, the types of collisions, the angle of road, and also deduce formulas of coordinate of paths. The main method used in this research is the simulation of different situations. By the method, the analytic model of safe passage of oncoming straight and left-turn vehicles for at-grade signalized intersections will be established, and this study will also subsume critical speed of conflict and expected number of times of safe passage. Finally involved rules of safe passage will be proffered. So, current legislation of punishment regulation of the traffic's administration and rule of the traffic's safety may be improved through considerations taken from this study.

Keywords : At-Grade Signalized Intersections, Oncoming Straight and Left-Turn Vehicles, Safe Passage