最为常用的绿波带协调控制主要是人为根据路口关联度先进行控制子区划分，然后在每一个子区内引入内部相位差协调单股或两股直线路径、构建双向闭环绿波带数学表达式，此类方法不能协调多股带有冲突点的非直线路径，且仅以带宽最大为优化目标，缺乏对于交通系统定量指标的辨识与计算。因此，本课题主要是针对走廊上公交车和小汽车各有两股及以上非直线大流量冲突路径时，如何引入新的决策变量和数学理论建立各股车流运动状态受信号配时、其他路径的车辆阻挡和公交停靠站干扰等复杂因素影响的数学解析表达式，研究干线协调模型中基于新交通评价指标的目标函数量化方法、以及带有长距离路径分割位置自动辨识功能的约束条件，同时优化路口信号参数、公共周期和协调相位差。

具体途径是分析传统干道协调方法在带有众多信号灯控路口的长距离公交走廊上应用时的不足，研究信号协调影响下车辆时空运动过程量化方法，据此提出考虑公交需求的离线条件下面向多股大流量路径的被动协调控制模型。首先，研究预测干道上公交车和小汽车的车辆时空运动过程，在信号配时和车流状态未知情况下，研究每条大流量路径上车辆运动过程受信号特征参数（周期、绿信比和协调相位差）、交通流量（路口、路段和站台处），以及停靠站时间（涵盖公交进站、靠站和出站时间）等关键影响因素的量化方法，实现各股路径的社会综合成本估计。然后，针对走廊上长距离路径协调的复杂性，综合考虑各股冲突路径的长度和总旅行时间预测值等因素，研究长距离路径的分割原则及可计算的分割成本算法；以各股路径的社会综合成本和分割成本加权和为优化目标，研究带有路径自动划分功能、面向多股冲突路径的优先协调控制模型，实现公共周期、相位差和路口绿信比的同步优化，在离线条件下设计大多数小汽车和公交车同时共享的协调绿波带。最后，借助微观仿真分析公共周期、绿信比、协调路口数和公交停靠站时间等关键变量的最优边界与灵敏度范围。

1. Y. Lin, X. Yang, and N. Zou. Passive Transit Signal Priority for High Transit Demand: Model Formulation and Strategy Selection. Transportation Letters: the International Journal of Transportation Research, vol.11, no.3, pp.119-129, 2019.
2. Y. Lin, X. Yang, N. Zou, and M. Franz. Transit signal priority control at signalized intersections: a comprehensive review. Transportation letters, vol.7, no.3, pp.168-180, 2015.（重点关注）
3. J. Zhao, and W. Ma. Optimizing Vehicle and Pedestrian Trade-Off Using Signal Timing in Intersections with Center Transit Lanes. Journal of Transportation Engineering, Part A: Systems, vol.144, no.6, 04018023, 2018. （重点关注）
4. W. Ma, K. L. Head, and Y. Feng. Integrated optimization of transit priority operation at isolated intersections: A person-capacity-based approach. Transportation Research Part C: Emerging Technologies, vol.40, pp.49-62, 2014. （重点关注）
5. L. T. Truong, G. Currie, and M. Sarvi. Analytical and simulation approaches to understand combined effects of transit signal priority and road-space priority measures. Transportation Research Part C: Emerging Technologies, vol.74, pp.275-294, 2017. （重点关注）
6. J. Hu, B. B. Park, and Y. J. Lee. Transit signal priority accommodating conflicting requests under Connected Vehicles technology. Transportation Research Part C: Emerging Technologies, vol.69, pp.173-192, 2016. （重点关注）
7. Dai G., H. Wang, and W. Wang. Signal Optimization and Coordination for Bus Progression based on MAXBAND. *KSCE Journal of Civil Engineering*, Vol. 20, No. 2, 2015, pp.1-9. （重点关注）
8. Dell’Olmo P., and P. Mirchandani. REALBAND: An Approach for Real-Time Coordination of Traffic Flows on Networks. In *Transportation Research Record: Journal of the Transportation Research Board*, No. 1494, Transportation Research Board of the National Academies, Washington, D.C., 1995, pp.106-116. （重点关注）
9. Gartner N. H., S. F. Assmann, F. Lasaga, and D. L. Hou. A Multi-band Approach to Arterial Traffic Signal Optimization. *Transportation Research Part B*, Vol. 25, No. 1, 1991, pp. 55-74. （重点关注）
10. Cheng Y., X. Yang, and G-L Chang. A Bus-Based Progression System for Arterials with Heavy Transit Flows. Presented at the 94th Annual Meeting of the Transportation Research Board, Washington, D.C., 2015. （重点关注）
11. Christofa E., and A. Skabardonis. Traffic Signal Optimization with Application of Transit Signal Priority to an Isolated Intersection. In *Transportation Research Record: Journal of the Transportation Research Board*, No. 2259, Transportation Research Board of the National Academies, Washington, D.C., 2011, pp. 192-201.
12. He Q., K. L. Head, and J. Ding. Multi-modal Traffic Signal Control with Priority, Signal Actuation and Coordination. *Transportation Research Part C: Emerging Technologies*, 2014, 46, pp. 65-82.
13. Head L., D. Gettman, and Z. P. Wei. Decision Model for Priority Control of Traffic Signals. In *Transportation Research Record: Journal of the Transportation Research Board*, No. 1978, Transportation Research Board of the National Academies, Washington, D.C., 2006, pp. 169-177.
14. Hu J., B. B. Park, and Y. J. Lee. Coordinated Transit Signal Priority Supporting Transit Progression under Connected Vehicle Technology. *Transportation Research Part C: Emerging Technologies*, 2015, 55, pp. 393-408.
15. Hu J., B. B. Park, and Y. J. Lee. Transit Signal Priority Accommodating Conflicting Requests under Connected Vehicles Technology. *Transportation Research Part C: Emerging Technologies*, 2016, 69, pp. 173-192.
16. Lin Y., X. Yang, G-L Chang, and N. Zou. Transit Priority Strategies for Multiple Routes under Headway-based Operations. In *Transportation Research Record: Journal of the Transportation Research Board*, No. 2356, Transportation Research Board of the National Academies, Washington, D.C., 2013, pp. 34-43.
17. Lin Y., X. Yang, N. Zou, and M. Franz. Transit Signal Priority Control at Signalized Intersections: a Comprehensive Review. *Transportation Letters: the International Journal of Transportation Research*, Vol.7, No. 3, 2014, pp.168-180.
18. Ma W., W. Ni, K. L. Head, and J. Zhao. Effective Coordinated Optimization Model for Transit Priority Control under Arterial Progression. In *Transportation Research Record: Journal of the Transportation Research Board*, No. 2356, Transportation Research Board of the National Academies, Washington, D.C., 2013, pp. 71-83.
19. Ma W., X. Yang, and Y. Liu. Development and Evaluation of a Coordinated and Conditional Bus Priority Approach. In *Transportation Research Record: Journal of the Transportation Research Board*, No. 2145, Transportation Research Board of the National Academies, Washington, D.C., 2010, pp. 49-58.
20. Pangilinan C., and K. Carnarius. Traffic Signal Timing for Optimal Transit Progression in Downtown San Francisco. Presented at the 90th Annual Meeting of the Transportation Research Board, Washington, D.C., 2011.
21. Yagar S., and B. Han. A Procedure for Real-time Signal Control that Considers Transit Interference and Priority. *Transportation Research Part B*, Vol. 28, No.4, 1994, pp.315-331.
22. Zeng X., Y. Zhang, K. N. Balke, and K. Yin. A Real-time Transit Signal Priority Control Model Considering Stochastic Bus Arrival Time. *IEEE Transactions on Intelligent Transportation Systems*, Vol. 15, No. 4, 2014, pp.1657-1666.