

The most travel delays in daily trips in modern large urban areas take place primarily at signal-controlled junctions due to regular interruption by alternating traffic lights. Therefore in urban traffic control road networks alleviation increasing of traffic congestion at signalized junctions becomes one of the most significant issues, facing decision makers at various levels of management. This paper is devoted to development of methodological tools to cope with problem of settings traffic signals for congested transportation network. The global traffic control system is assumed to define timing parameters of signals for the whole transportation network. Users of network are believed to react on any fixed signal setting, assigning according to user-equilibrium of Wardrop. Thus, the global optimal signal settings problem under user network equilibrium conditions is formulated as bi-level optimization program. When travel time is modeled by modified linear BPR cost function, the user-equilibrium flow patterns for two intersecting networks of parallel routes could be obtained as explicit condition of the lower programming level.