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Qualitative relations between moving objects in a network changing its topological relations.

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Summary: The Qualitative Trajectory Calculus on Networks (QTC_N) defines qualitative relations between two continuously moving point objects (MPOs) moving along a network. As prevailing in other research, this network is presumed static in QTC_N. Actually, in many cases, networks are dynamic entities. For example in a road network, the opening of a bridge can temporarily close the connection between two junctions; traffic jams and traffic lights increase the time needed to travel from A to B. Therefore, it is interesting to examine what happens with qualitative relations between two continuously moving point objects if there are changes in the network. In this paper, we introduce $QTC_{DN'}$, being the Qualitative Trajectory Calculus on Changing Networks able to handle topological network changes. Potential applications of the calculus in transportation are highlighted, clearly illustrating the usefulness of the calculus.

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