

# The geometry of the space of null geodesics

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## Abstract

The topology and geometry of the space of null geodesics  $N$  of a space-time  $M$  are used to study the causal structure of the space-time itself. In particular, the question of whether the topology of  $N$  is Hausdorff or admits a compatible manifold structure carries information on the global structure of  $M$ , and the transversality properties of the intersections of skies of points tell whether the points are conjugate points on a null geodesic.

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