Abstract

Minkowski space is the mathematical model for space-time of special theory of relativity. Study of non-Euclidean topologies of physical interest on Minkowski space is a frontline area of research. The $A$-topology introduced by Nanda is one such topology, because its homeomorphism group is precisely the one generated by the inhomogeneous Lorentz group and the dilatations [11]. In this dissertation, $A$-topology is compared with some other topologies, namely, fine topology, time topology, space topology, $f$-topology, $t$-topology and $s$-topology and its topological properties have been studied. It has been obtained that $A$-topology is coarser than time, space and fine topology, but not comparable with $t$, $s$ and $f$-topology. Studying the topological properties, it is proved that it is Hausdorff, non-regular, non-normal, non-metrizable, non-compact, non-paracompact, non-locally compact, path-connected and connected.