Connectivity by geodesics on a class of globally hyperbolic spacetimes

Rossella Bartolo

Dipartimento di Meccanica, Matematica e Management
Politecnico di Bari

rossella.bartolo@poliba.it

Abstract.

During the past years there has been a considerable amount of research related to the problem of geodesic connectedness of Lorentzian manifolds. This topic has wide applications in Physics, but for mathematicians its interest is essentially due to the peculiar difficulty of this natural problem, which makes it challenging from both an analytical and a geometrical point of view.

In this talk I discuss the geodesic connectedness problem on globally hyperbolic spacetimes endowed with a complete, timelike or lightlike, Killing vector field and a complete Cauchy hypersurface.

Then I introduce the notion of open subset with convex boundary and present some applications of previous results.

References

[1] R. Bartolo, A.M. Candela, J.L. Flores, Connection by geodesics on open subsets of globally hyperbolic spacetimes, *International Journal of Geometric Methods in Modern Physics* **12** (2015), 1560009.

[2] R. Bartolo, A.M. Candela, J.L. Flores, Connection by geodesics on globally hyperbolic spacetimes with a lightlike Killing vector field, arXiv:1405.0804, *Rev. Mat. Iberoam.*, in press.

[3] A.M. Candela, J.L. Flores, M. Sánchez, Global hyperboliticity and Palais–Smale condition for action functionals in stationary spacetimes, *Adv. Math.* **218** (2008), 515-536.