

# Séminaire d'algèbre, topologie et géométrie

## Jeudi 25 novembre à 14h

### Salle Fizeau

**Rym Smai**

Avignon

#### *Conformally flat spacetimes with complete lightlike geodesics*

In 2013, Rossi proves that if a maximal globally hyperbolic (abbrev. GHM) conformally flat spacetime has two homotopic lightlike geodesics, which are distinct and with the same ends then it is a finite quotient of the Einstein universe. In this case, the ends of such lightlike geodesics are said to be conjugate. In the continuity of this result, I am interested in describing GHM conformally flat spacetimes with complete lightlike geodesics (i.e. which develop as lightlike geodesics joining two conjugate points in the Einstein universe). In this talk, I will describe an example of such spacetimes, that I call a Misner domain of the Einstein universe. Under some hypothesis, I prove that the universal covering of a MGH conformally flat spacetime with complete lightlike geodesics contains a Misner strip. The goal would be to prove that any MGH Cauchy compact conformally flat spacetime can be obtained by grafting (or removing) a Misner strip from another one. This would be the Lorentzian analogous of the operation of grafting on hyperbolic surfaces introduced by Thurston.