

## CMM PDE Seminar

**Speaker:** Alma Albujer, Universidad de Alicante, España

**Title:** "Parabolic trapped subvarieties in globally hyperbolic spacetimes" .

### Abstract:

Abstract: Since 1965 when Penrose defined the concept of a trapped surface (compact and without boundary) in a 4-dimensional space-time, these surfaces have been an important object of study for geometricians and theoretical physicists, standing out for their mathematical properties as well as for their applications in general relativity. Trapped surfaces can be defined in terms of the causal character of their mean curvature vector, which allows us to generalize them to subvarieties, not necessarily compact and of any dimension and/or codimension, in space-time.

In this talk we show rigidity and non-existence results for parabolic spatial subvarieties with causal mean vector curvature in spacetimes that admit an orthogonal decomposition. These spacetimes contemplate, in particular, the family of globally hyperbolic spacetimes. On the other hand, we also give a result on the geometry of a more general family of subvarieties in such spacetimes, assuming the non-existence of local minima or maxima of a given function. As an application of our results in the field of general relativity, we obtain some results on trapped surfaces (not necessarily closed) in a very large family of spacetimes.

The results presented are part of a joint work with Professors Jónatan Herrera and Rafael M. Rubio of the University of Córdoba.

Venue: Sala John Von Neumann, CMM. Beauchef 851, 7th floor.

Zoom: <https://uchile.zoom.us/j/93324747064?pwd=bzbZ2ADlpsi2ye6t00fJnwWOLJ4JLy.1>

Friday, March 21th at 12:10 pm.

For further information, see our webpage: <https://eventos.cmm.uchile.cl/pdeseminar/>