

CMM PDE Seminar

Speaker: Carolina Urzúa (Delft University of Technology), Países Bajos,

Title: On Space-Time Formulations and Boundary Integral Equations for the Wave Equation.

Abstract: Space-time discretization methods are becoming increasingly popular, since they allow adaptivity in space and time simultaneously, and can use parallel iterative solution strategies for time-dependent problems. However, in order to exploit these advantages, one needs to have a complete numerical analysis of the corresponding Galerkin methods.

In this talk, we consider the wave equation with on a Lipschitz bounded domain, with either Dirichlet or Neumann boundary conditions, and with zero initial conditions. The first step to build the required numerical analysis was to show new existence and uniqueness results for the weak formulations of these initial boundary value problems. With this, we are able to propose a new approach to boundary integral equations for the wave equation that allows us to prove that the associated boundary integral operators are continuous and satisfy inf-sup conditions in trace spaces of the same regularity, which are closely related to standard energy spaces with the expected regularity in space and time. This feature is crucial from a numerical perspective, as it provides the foundations to derive sharper error estimates and paves the way to devise stable and efficient adaptive space-time boundary element methods.

To be held in person at **Sala de seminarios John Von Neumann, 7th floor**, Beauchef 851, and online via zoom:

<https://uchile.zoom.us/j/94037196076?pwd=NHpXUUNnaHV5Ung0UzZnNldOaHgrZz09>

Thursday, November 24, 2022 at 12 Santiago time

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

