

Seminar EDPs

Speaker: Cristóbal Corral (Universidad Arturo Prat, Chile)

Title: Gravitational instantons in AdS: (anti-)self duality, topological terms, and conformal invariance.

Abstract: In this talk, we present some recent developments in obtaining conserved charges and thermodynamics of Euclidean, regular, and stationary solutions in general relativity. The introduction of topological terms renders the Euclidean Einstein-Hilbert on-shell action and Noether-Wald charges finite. The former is proportional to the Chern-Pontryagin index when evaluated at (anti-)self-dual solutions and the resemblance with instantons in Yang-Mills theory is evident. We work out the case of Taub-NUT/Bolt-AdS explicitly and compute the contribution of the Misner string to Wald's entropy by treating on the same footing the AdS and AIAdS sectors. Then, we show that conformal gravity also admits non-Einstein (anti-)self-dual gravitational instantons exhibiting the typical low decaying mode of conformal gravity. This permits the identification of a simple Neumann boundary condition that, as it happens in the asymptotically AdS sector, selects the Einstein solution out of the solutions of conformal gravity. All the geometries present non-vanishing Pontryagin index and Euler characteristic, being single-centered instantons. We compute the conserved charges of the Taub-NUT/Bolt and Eguchi-Hanson spacetimes, which happen to be finite. This enables us to study the thermodynamic properties of these geometries.

La dirección Zoom:

<https://uchile.zoom.us/j/85287312903?pwd=TklsUE5iVjNzbzlQWW5mTjEwd3NPdz09>

ID de reunión: 852 8731 2903

Código de acceso: 651065

Thursday (7/01) at 4:15 pm (Chilean time).