Week 1 Abstracts

Speaker: Olivier Biquard

Abstract: Gravitational instantons are finite energy Ricci flat complete 4-manifolds. They are completely understood in the Kähler setting, but remain mysterious in general, with old questions going back to the 90's. There are some exciting developments in the field at the moment, and I shall explain some recent results using Hermitian geometry.

Speaker: Bernardo Araneda

Abstract: The Ernst formulation of the Einstein equations provides a solution-generating technique and leads to infinite-dimensional hidden symmetries encoded in the Geroch group. Other solution-generating methods are based on the existence of complex structures, such as the Gibbons-Hawking ansatz and Toda constructions. I will present a novel interplay between these two methods. As an application, the Einstein-Maxwell version of the Euclidean Black Hole Uniqueness Conjecture will be addressed. Based on joint work with Maciej Dunajski.