Phase space analysis in Dunkl setting

P. Cerejeiras

Phase space describes simultaneously the *momentum* p of a given particle and its position q. Moreover, canonical transformations of the phase-space give the time-evolution of the related system, together with its symmetries, or invariants, of the sympletic form $[p, q]$. However, if in classical mechanics the observable is fully determined once the value of the state of the system is known the same is no longer true in quantum mechanics, the observables being probability distributions and, hence, one requires $\mathbb{R}^{2n+1}$ as phase-space.

In this setting, the basic operators are given as multiplication with the coordinate and by partial derivatives. In recent years, it appeared in the study of quantum n-body systems a new type of operators, the so-called *Dunkl operators*. In this talk we will show that one can replace the classic partial derivatives by the Dunkl operators and obtain a theory analogous to the classic one. Moreover, we will show that the usage of Weyl relations allows to obtain a higher dimension function theory invariant under reflection groups.