Radial Components and Rational Cherednik Algebras

Let $(G : V)$ be a polar representation (in the sense of Dadok and Kac) of a semisimple complex Lie Group. Then, the ring of invariant polynomials $\mathbb{C}[V]^G$ is isomorphic to $\mathbb{C}[\mathfrak{h}]^W$ for some finite complex reflection group $W \subset \mathrm{GL}(\mathfrak{h})$ and one can define a radial component map

$$\mathrm{rad} : \mathcal{D}(V)^G \longrightarrow \mathcal{D}(\mathfrak{h}/W)$$

where $\mathcal{D}(X)$ denotes the algebra of differential operators on some variety X.

In this talk we will explain that, in some cases (e.g. when $\dim \mathfrak{h} = 1$), the algebra $\mathrm{Im}(\mathrm{rad})$ of radial components can be described in terms of the spherical subalgebra of a rational Cherednik algebra.