A fundamental tool in studying the (ordinary/modular) representation theory of a finite group of Lie type is the partition of the (ordinary) irreducible characters of the corresponding Weyl group into so-called Lusztig families. The most important families are the cuspidal ones, which are those not induced from a proper parabolic subgroup. In joint work with Gwyn Bellamy (University of Glasgow) we have identified these families as being the zero-dimensional symplectic leaves of the Calogero-Moser space attached to the Weyl group, thus providing a Poisson geometric interpretation of Lusztig’s notion of cuspidality.

This is further evidence for a fundamental (yet unknown) connection between finite groups of Lie type and rational Cherednik algebras at $t=0$. 