September 27: Ivan Losev (Northeastern), "On dimensions of irreducible representations of semisimple Lie algebras in characteristic p."

In this talk (based on a joint work with Bezrukavnikov) I will discuss the representation theory of semisimple Lie algebras $\mathfrak{g}$ in very large positive characteristic p. It is classically known that the universal enveloping algebra is a free finite rank module over its central subalgebra known as the p-center. This subalgebra is a copy of the symmetric algebra of the initial Lie algebra (with Frobenius twist). In particular, all irreducible representations are finite dimensional and have a p-character, an element of $\mathfrak{g}$. A particularly interesting case is when the p-character is nilpotent. It is known after Bezrukavnikov and collaborators that the set of simples with nilpotent p-character is independent of p and the dimensions are polynomials in p as long as p is sufficiently large. In this talk I will explain how to compute the degrees of these dimension polynomials.