



## Algebra and Number Theory Seminar

**Title:** Macdonald polynomials and level two Demazure modules for affine  $\mathfrak{sl}_{n+1}$

**Speaker:** Rekha Biswal (Bonn)

**Date:** Thu 31st October 2019 at 2:00PM

**Location:** Seminar Room SCN 1.25

**Abstract:** Macdonald polynomials are a remarkable family of orthogonal symmetric polynomials in several variables. An enormous amount of combinatorics, group theory, algebraic geometry and representation theory is encoded in these polynomials. It is known that the characters of level one Demazure modules are non-symmetric Macdonald polynomials specialized at  $t = 0$ . In this talk, I will define a class of polynomials in terms of symmetric Macdonald polynomials and using representation theory we will see that these polynomials are Schur-positive and are equal to the graded character of level two Demazure modules for affine  $\mathfrak{sl}_{n+1}$ . As an application we will see how this gives rise to an explicit formula for the graded multiplicities of level two Demazure modules in the excellent filtration of Weyl modules. This is based on joint work with Vyjayanthi Chari, Peri Shereen and Jeffrey Wand.

[https://maths.ucd.ie/~kazim\\_b/UCD\\_ANT\\_seminar.html](https://maths.ucd.ie/~kazim_b/UCD_ANT_seminar.html)