

Algèbres non commutatives, théorie des représentations et fonctions  
spéciales  
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Non-commutative algebras, representation theory and special functions  
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### **Irreducible modules of the cyclotomic KLR algebras**

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Irreducible modules form the backbone of the representation theory of the cyclotomic KLR algebras, yet much structural data remains out of reach in higher levels. In this talk, I will discuss current joint work with Rob Muth and Liron Speyer on explicitly determining dimensions and bases of some irreducible modules in higher levels.

The representation theory of cyclotomic KLR algebras is governed by Specht modules, whilst skew Specht modules govern the affine KLR algebras. We deduce that certain skew Specht modules are irreducible from the known irreducibility of Specht modules for the Iwahori--Hecke algebra of the symmetric group. In doing so, we determine an explicit description of irreducible modules in terms of these skew Specht modules.