Algebra Seminar

Dr. Mark Penney
University of Oxford

Wednesday, September 21, 2016
1:00 p.m., HH-3017

Categorification of Zelevinsky's PSH algebras

Abstract:

In his 1981 text "Representations of finite classical groups: a Hopf algebra approach" Zelevinsky introduced positive, self-adjoint Hopf (PSH) algebras. Using general structural results of PSH algebras Zelevinsky provided a uniform and elementary treatment of many results in the representation theory of symmetric groups, wreath product groups, and general linear groups over finite fields.

Categorification is the name of a general program attempting to realise structures on sets and vector spaces as `shadows' of structures on categories. A simple example is that the representation ring of a group is a `shadow' of the full category of representations of that group.

In this talk I will begin by reviewing Zelevinsky's PSH algebras. I will then spend some time discussing categorification with the aim of describing the categorical analogues of bialgebras. Finally, I will explain how to construct categorifications of the main examples of PSH algebras. Time permitting, I may also discuss what new perspectives categorification provides for PSH algebras.