Modules of 0-Hecke algebras from posets

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In this talk, our main focus is on exploring a specific class of mathematical objects called right 0-Hecke modules, which arise from partially ordered sets. These modules, also known as poset modules, were introduced by Duchamp, Hivert, and Thibon. Their work involved investigating the intriguing algebraic and combinatorial properties of these modules.

We specifically consider the category of the full subcategory of right 0-Hecke modules, where the objects are direct sums of finitely many isomorphic copies of poset modules. Our first result establishes that the direct sum of the Grothendieck groups of the poset module category is isomorphic to the Hopf algebra of quasisymmetric functions. Furthermore, we demonstrate that every right weak Bruhat interval module can be viewed as a poset module. By introducing a certain functor, we also establish that every left weak Bruhat interval module can be viewed as a poset module.

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