

## UBC Number Theory Seminar: October 6, 2021

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**Speaker:** Rylan Gajek-Leonard (UMass Amherst)

**Title:** Iwasawa Invariants of Modular Forms with  $a_p = 0$

**Abstract:** Mazur-Tate elements provide a convenient method to study the analytic Iwasawa theory of  $p$ -nonordinary modular forms, where the associated  $p$ -adic  $L$ -functions tend to have unbounded coefficients. The Iwasawa invariants of Mazur-Tate elements are well-understood in the case of weight 2 modular forms, where they can be related to the growth of  $p$ -Selmer groups and decompositions of the  $p$ -adic  $L$ -function. At higher weights, less is known. By constructing certain lifts to the full Iwasawa algebra, we compute the Iwasawa invariants of Mazur-Tate elements for higher weight modular forms with  $a_p = 0$  in terms of the plus/minus invariants of the  $p$ -adic  $L$ -function. Combined with results of Pollack-Weston, this forces a relation between the plus/minus invariants at weights 2 and  $p + 1$ .