

TOPOLOGY SEMINAR

Guest Speaker: Dana Hunter
University of Oregon

Date: Tuesday, March 22, 2022

Time: 2:30 PM

Location: 318 DeBartolo Hall

Zoom Link: notredame.zoom.us/j/97262637721

Lecture Title:

The Curtis-Wellington spectral sequence through cohomology



Abstract

In this talk, we will discuss an unstable approach to studying stable homotopy groups as pioneered by Curtis and Wellington. Using the Barratt-Priddy-Quillen theorem, we can identify the (co)homology of BS_∞ with the (co)homology of the base point component of the loop space which represents stable homotopy. Using cohomology instead of homology to exploit the nice Hopf ring presentation of Giusti, Salvatore, and Sinha for the cohomology of symmetric groups, we find a width filtration, whose subquotients are simple quotients of Dickson algebras, which thus give a new filtration of stable homotopy. We make initial calculations and determine towers in the resulting width spectral sequence. We also make calculations related to the image of J and conjecture that it is captured exactly by the lowest filtration in the width spectral sequence.