CARLOS GABRIEL VALENZUELA, University of Regina
Double cohomology and sphere triangulations

Given a simplicial complex $\mathcal{K}$ it's of general interest to study it's moment-angle complex $\mathcal{Z}_\mathcal{K}$, particularly in toric topology. In 2020, Limonchenko, Panov, Stanley and Song designed a new homological invariant for $\mathcal{Z}_\mathcal{K}$ called the double (co)homology. This invariant is less chaotic by design than the regular (co)homology of $\mathcal{Z}_\mathcal{K}$ which can be of interest for applications. It remains an unsolved problem whether this new (co)homology theory can be of any prescribed rank.

In my work I've been studying sphere triangulations and how their associated double cohomology behaves under operations to them. These are particularly interesting, as their double cohomology is a Poincare Algebra. Furthermore, these complexes turn out to be a good starting point for constructing complexes with exotic double homology rank.

During the talk I'll introduce the construction of double homology and present some recent results about it.