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Mod 2 cohomology and the braid group

A classical theorem of Mahowald states that the Eilenberg-MacLane spectrum of $\mathbb{Z}/2$ is the Thom spectrum of the stable Hopf bundle on the double loop space of the 3-sphere. Thus, $H\mathbb{Z}/2$ is filtered by Thom spectra on the classifying spaces of the braid groups. There is a closely related filtration built from symmetric powers, and these two filtrations capture the intricate behavior of mod 2 power operations.

I'll discuss recent work which generalizes this story to the equivariant setting, including two actions of the cyclic group of order two on the braid group and a geometric interpretation of equivariant mod 2 homology in terms of bundles.