1121-05-134 **Aba Mbirika*** (`mbirika@uwec.edu`), University of Wisconsin-Eau Claire, and **Julianna Tymoczko**. *Combinatorial questions related to the representation stability of the cohomology of Springer varieties.* Preliminary report.

The Springer variety $\mathfrak{S}_X$ is the set of flags stabilized by a nilpotent operator $X \in Mat_n(\mathbb{C})$. Each nilpotent operator corresponds to a partition μ_n of n via decomposition of X into Jordan canonical blocks. The Springer representation arises when the symmetric group S_n acts on the cohomology ring of this family of varieties. Constructed by Springer in 1976, this ring $H^*(\mathfrak{S}_X)$ was later given a simplified presentation by Concini and Procesi, then refined by Tanisaki who simplified the Concini-Procesi ideals, and finally Garsia and Procesi who gave a basis for $H^*(\mathfrak{S}_X)$ as a quotient $R(n)/I_{\mu_n}$ where $R(n) = \mathbb{C}[x_1, \ldots, x_n]$ and the I_{μ_n} are the Tanisaki ideals.

We present some combinatorial aspects that arise in the representation stability of the sequence $\{H^*(R(n)/I_{\mu_n})\}_{n=1}^{\infty}$. In joint work with Tymoczko, we describe the co-FI-module structure (in the sense of Church, Ellenberg, and Farb) of this sequence. A surprising feature of the proof is that this structure exists for every possible sequence $\mu_1 \subseteq \mu_2 \subseteq \cdots$ of Young diagrams. We explore some combinatorial questions related to this representation stability of the Springer representation. (Received July 16, 2016)