1176-05-26   **Christin Bibby**, **Melody Chan**, **Nir Gadish** and **Claudia Yun*** (`he_yun@brown.edu`).

Homology representations of compactified configurations on graphs.

The n-th ordered configuration space of a graph parametrizes ways of placing n distinct and labelled particles on that graph. The homology of the one-point compactification of such configuration space is equipped with commuting actions of a symmetric group and the outer automorphism group of a free group. We give a cellular decomposition of these configuration spaces on which the actions are realized cellularly and thus construct an efficient free resolution for their homology representations. As our main application, we obtain computer calculations of the top weight rational cohomology of the moduli spaces $\mathcal{M}_{2,n}$, equivalently the rational homology of the tropical moduli spaces $\Delta_{2,n}$, as a representation of S_n acting by permuting point labels for all $n \leq 10$. This is joint work with Christin Bibby, Melody Chan, and Nir Gadish. (Received January 03, 2022)