Eric Samperton* (egsamp@math.ucdavis.edu). Mapping class group actions on representation sets of surfaces and universality in (2+1)-D TQFT.

Fix a finite group $G$ and let $S$ be a surface. The mapping class group $\text{MCG}_*(S)$ acts on the set of $G$-representations $\{\pi_1(S) \to G\}$. Varying $S$, the different actions can be packaged as a (2+1)-D TQFT, closely related to the Dijkgraaf-Witten theory associated to $G$. More precisely, the actions are those afforded by the $G$-crossed modular tensor category of $G$-graded vector spaces.

In joint work with Greg Kuperberg, the author proved a precise version of classical computational universality for these actions when $G$ is a nonabelian simple group. We will discuss these results, and their possible applications to the quantum universality of modular tensor categories via the process of gauging. (Received September 26, 2017)