1044-55-127   **Vigleik Angeltveit*** (`vigleik@math.uchicago.edu`), Department of Mathematics, University of Chicago, 5734 S University Ave, Chicago, IL 60637, and **J Peter May**, Department of Mathematics, University of Chicago, 5734 S University Ave, Chicago, IL 60637. *From multicategories of permutative categories to multicategories of S-modules.* Preliminary report.

We start with a small multicategory $\mathcal{M}$ parametrizing (multiplicative) structure such as that of a commutative monoid, a commutative monoid and a module, or a commutative monoid, an algebra, and a bimodule. Given a permutative category for each object in $\mathcal{M}$ with tensor products specified by $\mathcal{M}$ such that certain diagrams commute up to natural isomorphism, we construct E_∞ spaces with extra structure given by a parametrized version of $\mathcal{M}$. By feeding this into an infinite loop space machine and converting to S-modules we get an $\mathcal{M}$-diagram of S-modules. (Received August 28, 2008)