TWISTED INVOLUTIONS ON $S[\Omega M]$ VIA OPERADS

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The ring spectrum $S[\Omega M]$ is a generalization to stable homotopy theory of the group ring $\mathbb{Z}[\pi_1 M]$. Recall that surgery obstructions for a compact smooth manifold M were defined with respect to a twisted involution on the latter ring. This talk introduces a discrete operad $\mathcal{H}$, whose algebras are monoids with an anti-commutative involution. In order to define twisted involution on $S[\Omega M]$ we design operads $\mathcal{D}_n$ in orthogonal spectra, weakly homotopy equivalent to $\mathcal{H}$. We define a twisted $\mathcal{D}_n$-algebra structure on $S[\Omega M]$ via parallel transportation in a smooth n-vector bundle over M. I hope that this work will provide a fundation for a parametrized surgery theory and a calculation of the homotopy type of the automorphism groups of M.