1165-58-76 **Jianfeng Lin*** (jil063@ucsd.edu), 9500 Gilman Dr, La Jolla, CA 92122. *The family Seiberg-Witten invariants and the symplectormorphism group of 4-manifolds.* Preliminary report.

Let (X, ω) be a symplectic 4-manifold and let $\mathrm{Diff}(X)$ (resp. $\mathrm{Symp}(X)$) be the topological group consisting of diffeomorphisms (resp. symplectormorphisms) on X. It's a natural question to ask when is the inclusion map $i : \mathrm{Diff}(X) \to \mathrm{Symp}(X)$ a homotopy equivalence. Building on earlier work of Kronheimer, Smirnov established essential loops in $\mathrm{Diff}(X)$ which do not come from $\mathrm{Symp}(X)$ for many algebraic surfaces X. In this talk, we will present a result that establishes such loops for any X that contains a smoothly embedded sphere that has self-intersection -2 and pairs trivially with the canonical class. The key tool is a new gluing formula that expresses the family Seiberg-Witten invariants in terms of the monopole Floer homology. (Received January 06, 2021)