1070-55-82 **Mahmoud Zeinalian*** (mzeinalian@liu.edu), **Thomas Tradler**, **Scott Wilson** and **Gregory Ginot**. *Equivariant holonomy of gerbes and higher Hochschild complexes.*

Consider the holonomy of a connection on a vector bundle E over a manifold M as a section of the pullback of the endomorphism bundle End(E) over the free loop space LM via the map that sends a loop to its basepoint. The covariant derivative of the this section is a 1-form on the loop space with values in this pullback bundle. A special feature of this 1-form naturally leads to completing the holonomy section to a mixed degree form with values in the above pullback bundle whose trace coincides with the Getzler-Jones-Petrack's description of the Bismut's equivariant Chern character. We will define higher Hochshcild complexes, give an axiomatic characterization of them as a certain (infinity, 1)-functor. We use higher Hochschild complexes to complete holonomy of a gerbe to a torus-equivariant differential form on the mapping space of the standard torus into M. This is report on the join works with G. Ginot, T. Tradler, S. Wilson. (Received January 28, 2011)