Christopher L. Rogers* (crogers@uni-math.gwdg.de), Mathematisches Institut, Georg-August-Universität Göttingen, D-37073 Göttingen, Germany. Symmetries of closed differential forms and Lie algebras up to homotopy.

In this talk, I will consider higher degree closed differential forms as generalizations of symplectic structures. Canonically associated to any manifold equipped with such a closed form is an algebraic structure called an $L_\infty$-algebra, or Lie algebra up to homotopy. This structure is built from multilinear bracket-like operations on so-called “Hamiltonian forms”, and thus plays the role of the Poisson algebra in this context. I’ll explain how to use this algebraic structure to construct moment maps for group actions on such manifolds, and also describe a generalization of Kirillov-Kostant-Souriau geometric prequantization. Along the way, I will present several interesting examples, and highlight relationships between this work and other approaches used in generalized geometry and bundle gerbe theory. Many of these results are due to recent joint work (arXiv:1304.2051) with Y. Frégier (MIT/Zurich) and M. Zambon (ICMAT/Madrid). (Received September 16, 2013)