1176-53-18 **Saman Habibi Esfahani*** (saman.habibiesfahani@stonybrook.edu), 600 N Country Rd, St James, St James, NY 11780. *Monopoles on Manifolds with Special Holonomy and Fueter Sections.* Preliminary report.

Donaldson and Segal hinted at the idea of defining invariants of certain non-compact Calabi-Yau 3-folds by counting monopoles on these manifolds. We examine the possibility of defining monopole invariants for G2-manifolds and Calabi-Yau 3-folds — both compact and non-compact. In the compact case, one should consider monopoles with singularities along certain calibrated submanifolds — introduced by Oliveira. The main difficulty in this program is the potential non-compactness issues which appear in the higher-dimensional gauge theories. These monopole invariants, conjecturally, are related to the calibrated submanifolds, more specifically, the special Lagrangians in the Calabi-Yau case, and the co-associatives in the G2 case, similar to the Taubes' theorem, which relates the Seiberg-Witten and Gromov invariants of a symplectic 4-manifold. Again, a major difficulty in proving such a theorem is related to potential non-compactness problems, here, the non-compactness of the spaces of Fueter sections defined on 3- and 4-manifolds. We prove partial results in this direction, examining the different sources of non-compactness, and proving some of them, in fact, do not occur. (Received December 27, 2021)