1015-57-299 **Selman Akbulut*** (`akbulut@math.msu.edu`), MSU, Dept of Math, E.Lansing, MI 48824, and **Sema Salur** (`salur@math.northwestern.edu`), Northwestern University, Dept of Math, Chicago, IL 60208. *Associative Submanifolds of a G_2 Manifold.*

McLean showed that the space $\mathcal{A}(M)$ of Associative submanifolds of an integrable G_2 manifold (M,φ), in a neighborhood of a fixed one $Y \subset (M,\varphi)$, can be identified with the kernel of the Dirac operator on the normal bundle $\not{D} : \Omega^0(\nu) \to \Omega^0(\nu)$. Hence $\mathcal{A}(M)$ is not smooth and the deformation space of Y is obstructed. We generalize this theorem to non-integrable (M,φ) case, and then relate this to pseudo-associative deformations of Y (where φ is also allowed to move, or alternatively allow that, only after rotating the tangent planes by a fixed element the gauge group, they be associative). By using this we can perturb $\mathcal{A}(M)$ to a smooth object, infinitesmally this has an affect of changing $\not{D}$ to a twisted Dirac operator $\not{D}_A$, twisted by some connection A in ν. We will discuss ways of obtaining compactness by cutting this perturbed object with some additional equations.

(Received February 07, 2006)