1139-57-589 **Selman Akbulut***, Michigan State University, Dept of Mathematics, 619 Red Cedar Road C-335 Wells, East Lansing, MI 48824. *Complex G_2 Manifolds.* Preliminary report.

I will report on the joint work, in progress with Ustun Yildirim, in which we define the notion of complex G_2 manifold, and complexifying a G_2 manifold (M,φ), which is $M_{\mathbf{C}} := (T(M), J_\varphi)$, where J_φ is a complex structure associated to φ. From this, we can show that the deformation equations of a given associative submanifold $L^3 \subset M$ inside $M_{\mathbf{C}}$ becomes the Seiberg-Witten equations:

$$D_{\mathbf{A}}(x) = 0$$
$$*F_A = \sigma(x).$$

These equations were first introduced in 2007, by S. Akbulut and S. Salur. The first term is the Dirac equation $D_{\mathbf{A}} = \sum e^j \times \nabla_{e_j}$. By using the normal bundle $L \subset M$ as a spinor bundle one gets the Seiberg-Witten equations. To do this naturally, we split $TM = E^3 \oplus V^4$ by using a 2-frame field. Then any unit section of E gives an almost complex structure on V, from this we can split $V_{\mathbf{C}} = V^{1,0} \oplus V^{0,1}$. The above equations take place in the complex bundle $V^{1,0}$, which is no longer the normal bundle of $L \subset M$. To fix this we view these equations as deformations in the complexificaion $L \subset M_{\mathbf{C}}$. (Received February 20, 2018)