1015-57-176 **Stefano Vidussi*** (svidussi@math.ucr.edu), Department of Mathematics, Surge Building, University of California, Riverside, Riverside, CA 92521. *Taubes' Conjecture and Twisted Alexander Polynomials.*

It is well-known that the Seiberg-Witten invariants provide obstructions to the existence of a symplectic structure on a 4–manifold. When the manifold has the form $S^1 \times N$, these obstructions can be described in terms of the Alexander polynomial of N. C. Taubes formulated the conjecture that, if $S^1 \times N$ is symplectic, then N fibers over the circle. P. Kronheimer studied the case where N is obtained as 0–surgery along a knot $K \subset S^3$ and showed that the aforementioned constraints on the Alexander polynomial Δ_N give evidence to Taubes' conjecture, i.e. Δ_N must be monic and its degree must coincide with the genus of the knot. In this talk we discuss how to extend these ideas to the case of a general 3–manifold and how to strengthen them by taking into account the twisted Alexander polynomials. This way we get new evidence to Taubes' conjecture and new obstructions to the existence of symplectic structures on $S^1 \times N$. As an application we show that if N is the 0–surgery along the pretzel knot $(5, -3, 5)$, a case that cannot be decided with the use of the Alexander polynomial, $S^1 \times N$ is not symplectic: this answers a question of Kronheimer. (*Joint work with Stefan Friedl of Rice University*) (Received February 03, 2006)