

5007-37-274

**André Vanderlinde da Silva\*** (andre\_vanderlinde@hotmail.com) and **Pedro Antonio Santoro Salomao** (psalomao@gmail.com). *On the Existence of Closed Reeb Orbit on the Non-degenerate Tight 3-Sphere*. Preliminary report.

Let  $\lambda$  be a non-degenerate tight contact form on  $S^3$ . Given a simply covered unknotted closed Reeb orbit  $P = (x, T)$  satisfying  $\mu_{CZ}(P) \leq 1$  and  $sl(P) = -1$ , we are able to prove the existence of a  $P' = (x', T')$  closed Reeb orbit not linked to  $P$  and satisfying  $\mu_{CZ}(P') = 2$ . Following P. Salomão and U. Hryniewicz, the proof is based on the theory of pseudoholomorphic curves in symplectizations introduced by H. Hofer. From a Bishop Family of disks with boundary on a suitable disk  $\mathcal{D}$  spanning  $P$ , we obtain, by using disk-filling methods, a finite-energy punctured pseudoholomorphic disk  $\tilde{u}_0 : \mathbb{D} \setminus \Gamma_0 \rightarrow \mathbb{R} \times S^3$  with boundary on  $\mathcal{D}$ . The curve  $\tilde{u}_0$  satisfies  $\int_{\mathbb{D} \setminus \Gamma_0} u_0^* d\lambda > 0$  which allow us to find a closed Reeb orbit  $P'$  which is asymptotic limit of an embedded finite-energy plane. The existence of  $P'$  follows from properties of bubbling-off tree of finite-energy spheres, Carleman Similarity Principle and positivity and stability of pseudoholomorphic immersions. (Received May 14, 2013)