Equilibrium positions of nonlinear differential-algebraic systems

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In this note we study particular deformations called "CB-deformations" of a codimension 1 foliation into contact structures, in order to prove first that: if M is a closed 3-manifold diffeomorphic to a quotient of the Lie group G under a discrete subgroup Γ acting by left multiplication, where G is $\widetilde{SL_2}$ (the universal cover of $PSL_2\mathbb{R}$) or $\widetilde{E_2}$ (the universal cover of the group of orientation preserving isometries of the Euclidean plane), then there is on M, a codimension 1-foliation which is CB-deformable into con-tact structures. Secondly with theses deformations, which are more general than the linear one introduced by Eliashberg and Thurston ([1]), we can prove also that every K-contact structure on a $2n + 1$-dimensional closed oriented manifold M such that $dim(H^1(M)) > 0$, converges into a codimension 1-foliation. This last one can be view as a generalization of a theorem of Etnyre([2]) on $2n + 1$-dimensional closed K-contact manifolds.

References

[1] Y. Eliashberg and W. P. Thurston. Confoliations , *University Lectures Series*, Amer. Math. Soc. 13(1998).

[2] J. B. Etnyre. Contact structures on 3-manifolds are deformations of foliations , *Math. Res. lett.* 14(2007), no. 5, 775-779.