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Contact Structures on 5–Folds

Roger Casals

CSIC – Madrid

An almost contact structure on a manifold is a complex distribution of real codimension one. Its existence is a necessary condition for the manifold to admit a contact structure. It is an open problem to decide whether this condition is also sufficient, it is conjecturally so. The work of D. Bennequin, Y. Eliashberg and M. Gromov provides an affirmative and fairly complete answer to the question for 3–folds and open manifolds of any dimension. The case of closed 5–folds has been solved in a joint work with D. Pancholi and F. Presas. We will present a construction using Lefschetz–type pencil decompositions and the flexibility of overtwisted contact structures. We will also comment on the analogous result in the approach of Giroux–Etnyre through open book decompositions and some recent developments in the field.
