

Yutaka, Kanda

The classification of tight contact structures on the 3-torus. (English) Zbl 0899.53028
Commun. Anal. Geom. 5, No. 3, 413-438 (1997).

A contact structure ζ on a 3-manifold is a completely non-integrable 2-plane field. It is called tight if the characteristic foliation of any embedded disc has no limit cycle. In the other case, ζ is called overtwisted, and its classification is then given by the homotopy classes of 2-plane fields. In contrast, the classification of tight contact structures is much more complicated.

Here, the author classifies orientable tight contact structures on the 3-torus. A complete list up to contact diffeomorphism is given by ζ_n , n a positive integer, where ζ_n is defined by the 1-form $\cos 2\pi n z dx + \sin 2\pi n z dy$. The proof uses the theory of characteristic foliations and convex surfaces of Giroux and a cut-and-paste method.

Reviewer: [Stephan Klaus \(Mainz\)](#)

MSC:

- 53C15** General geometric structures on manifolds (almost complex, almost product structures, etc.)
- 53C12** Foliations (differential geometric aspects)

Cited in **2** Reviews
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Keywords:

[tight contact structure](#); [characteristic foliation](#); [3-torus](#); [convex surface](#)

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