

The plastikstufe: A possible generalization of the overtwisted disk to higher dimensions?

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In 3-dimensional contact topology, the distinction between tight and overtwisted structures was the first step towards the classification of contact manifolds.

The natural procedure to generalize these notions to higher dimensions would consist in looking at those properties of overtwisted 3-manifolds, which can be easily formulated independently of the dimension. The proposed generalization should then imply at least some of these properties.

We define a submanifold foliated in a certain way by the contact structure, and show that its existence implies the non-fillability of the contact manifold. This makes it a candidate for being a higher-dimensional analogue of the overtwisted disk.