

**Rivière, Tristan**

**High-dimensional helicities and rigidity of linked foliations.** (English) Zbl 1045.57017

*Asian J. Math.* 6, No. 3, 505-534 (2002).

The paper opens with a very brief description of work of *M. H. Freedman* and *Z.-X. He* [*Ann. Math.* (2) 134, No. 1, 189–229 (1991; [Zbl 0746.57011](#))] on the generalized Hopf invariant and rigidity of knotted magnetic tubes. The work by Freedman and He builds on earlier ideas of *V. I. Arnol'd* [*Sel. Math. Sov.* 5, 327–345 (1986; [Zbl 0623.57016](#))], who termed the generalized Hopf invariant *helicities* in this context, and even earlier work by *S. P. Novikov* [*Russ. Math. Surv.* 39, No. 5, 113–124 (1984; [Zbl 0619.58002](#))]. The present author gives an ergodic interpretation of Hopf-Novikov helicities as conjectured by Arnol'd. Furthermore, the topological bounds obtained by Freedman and He for energies of invariant forms of linked foliations are extended to higher dimensions.

Reviewer: [Vagn Lundsgaard Hansen \(Lyngby\)](#)

**MSC:**

[57R30](#) Foliations in differential topology; geometric theory

[58E10](#) Variational problems in applications to the theory of geodesics (problems in one independent variable)

[57Q25](#) Comparison of PL-structures: classification, Hauptvermutung

Cited in 7 Documents

**Keywords:**

[Hopf-Novikov helicities; energies; foliations](#)

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