Moerdijk, Ieke; **Mrčun, J.**
Introduction to foliations and Lie groupoids. (English) ｜Zbl 1029.58012｜
Cambridge Studies in Advanced Mathematics. 91. Cambridge: Cambridge University Press. ix, 173 p. (2003).

Presupposing familiarity with the basic concepts of differential geometry, this small book gives a quick introduction to the theory of foliations, Lie groupoids and Lie algebroids. The interplay between the three concepts is constantly emphasized. Lie groupoids play a central role in the study of the transversal structure of a foliation by means of its holonomy and monodromy groupoids. Foliations are a special kind of Lie groupoids.

The book consists of six chapters. The first three chapters form a good introduction to the theory of foliations. In Chapter 5, the notion of Lie groupoid is introduced, and its elementary properties are discussed. The final chapter is devoted to the infinitesimal counterpart of Lie groupoid, namely, Lie algebroid, where it is examined how far the classical correspondence between Lie algebras and Lie groups can be extended to Lie algebroids and Lie groupoids. In Chapter 4, the authors discuss homogeneous and transversely parallelizable foliations, as well as Lie foliations, culminating in Molino's structure theorem for Riemannian foliations. Transversely parallelizable foliations provide natural examples of Lie algebroids which are not integrable.

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MSC:

58H05	Pseudogroups and differentiable groupoids
22A22	Topological groupoids (including differentiable and Lie groupoids)
58-02	Research exposition (monographs, survey articles) pertaining to global analysis
22-02	Research exposition (monographs, survey articles) pertaining to topological groups
57R30	Foliations in differential topology; geometric theory

Cited in **2** Reviews
Cited in **137** Documents

Keywords:

holonomy groupoid; foliations; Lie groupoids; Lie algebroids