Geometric flows

Paweł Walczak[*]

Abstract

We will survey results on geometric flows of two types:

- *intrinsic* acting on general Riemannian manifolds (see, for instance, [**CY**] and the bibliography therein) like famous *Ricci flow* (see, for example, [**CK**] and the bibliography therein) providing the solution of Poincaré Conjecture by Perelman [**Pe**], and

- *extrinsic* acting on Riemannian manifolds equipped with a foliation or, more generally, arbitary, perhaps nonintergrable, plane fields (see [**RW**] and the biblioraphy therein) and being motivated by the classical *mean curvature flow* (see, among the others, [**Br**, **Hu**, **Ma**] and, again and again, the bibliographies therein).

References

[**Br**] K. A. Brakke, *The motion of the surface by its mean curvature flow*, Princeton Univ. Press 1978.

[**CY**] H.-D. Cao and S.-T. Yao, *Geometric Flows*, International Press 2008.

[**CK**] B. Chow and D. Knopf, *The Ricci Flow: An Introduction*, Amer. Math. Soc. 2004.

[**Hu**] G. Huisken, *Flow by mean curvature of convex surfaces into spheres*, J. Diff. Geom., **20** (1984), 237 – 266.

[**Ma**] C. Mantegazza, *Lecture Notes on Mean Curvature Flow*, Birkhäuser 2011.

[**Pe**] G. Perelman, *three preprints*, arXive 2002 – 2003.

[**RW**] V. Rovenski and P. Walczak, *Extrinsic Geometry of Foliations*, Birkhäuser 2021.

---

[*]Katedra Geometrii, Uniwersytet Łódzki, ul. Banacha 22, 90-238 Łódź, Poland
e-mail: `pawel.walczak@wmii.uni.lodz.pl`