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BOOK REVIEW

Regularity Theory for Mean Curvature Flow, by Klaus Ecker, Progress in Nonlinear Differential Equations and Their Applications, vol. 57, Birkhäuser, Boston, xi + 165 pp, ISBN 0-8176-3243-3

As the author had stated in the *Preface*, this book was started as a set of informal notes on Brakke's theory [1] about mean curvature flow. The aforementioned theory is concerned with the motion of surfaces for which the normal velocity at every point is given by the mean curvature vector at that point. From some more abstract point of view this is an analogue of heat flow generated by a purely geometric process.

Actually, under the mean curvature flow, surfaces usually develop singularities in a finite time period and this book presents the necessary techniques for the study of singularities of the mean curvature flow. It is largely based on the work done by Brakke, but some more recent developments (mainly due to the author) are also incorporated. One can say that the book is focussed on the special case where smooth solutions of mean curvature flow develop singularities for the first time, thus expressing underlying ideas almost entirely in the language of differential geometry and partial differential equations. Notation from geometric measure theory (see [2] and [4] for details) were kept here to a minimum.

Just to help the reader to orientate himself in the topics discussed in this work we present below the Table of Contents of the book, namely:
Preface – Introduction – Special Solutions and Global Behaviour – Local Estimates via the Maximum Principle – Integral Estimates and Monotonicity Formulas – Regularity Theory at the First Singular Time – Geometry of Hypersurfaces – Derivation of the Evolution Equations – Background on Geometric Measure Theory – Local Results for Minimal Hypersurfaces – Remarks on Brakke's Clearing Out Lemma – Local Monotonicity in Closed Form – Bibliography – Index.

After presenting the preliminary material and main concept of mean curvature flow, this self-contained and systematic exposition aims to cover in some depth the essential details of the techniques leading to a proof of Brakke's main regu-