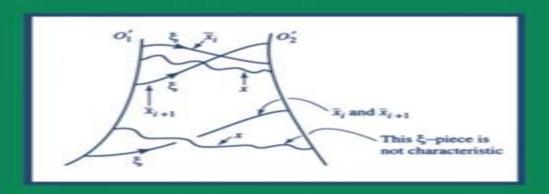
Progress in Nonlinear Differential Equations and Their Applications

### Abbas Bahri

## Flow Lines and Algebraic Invariants in Contact Form Geometry



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# Flow Lines And Algebraic Invariants In Contact Form Geometry

**Kathleen Armour** 

#### Flow Lines And Algebraic Invariants In Contact Form Geometry:

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Variational Problems in Riemannian Geometry Paul Baird, Ahmad El Soufi, Ali Fardoun, Rachid Regbaoui, 2012-12-06 This book collects invited contributions by specialists in the domain of elliptic partial differential equations and geometric flows. There are introductory survey articles as well as papers presenting the latest research results Among the topics covered are blow up theory for second order elliptic equations bubbling phenomena in the harmonic map heat flow applications of scans and fractional power integrands heat flow for the penergy functional Ricci flow and evolution by curvature of networks of curves in the plane

Travelling Waves in Nonlinear Diffusion-Convection Reaction Brian H. Gilding, Robert Kersner, 2012-12-06 This monograph has grown out of research we started in 1987 although the foun dations were laid in the 1970 s when both of us were working on our doctoral theses trying to generalize the now classic paper of Oleinik Kalashnikov

and Chzhou on nonlinear degenerate diffusion Brian worked under the guidance of Bert Peletier at the University of Sussex in Brighton England and later at Delft University of Technology in the Netherlands on extending the earlier mathematics to include nonlinear convection while Robert worked at Lomonosov State Univer sity in Moscow under the supervision of Anatolii Kalashnikov on generalizing the earlier mathematics to include nonlinear absorption We first met at a conference held in Rome in 1985 In 1987 we met again in Madrid at the invitation of Ildefonso Diaz where we were both staying at La Residencia As providence would have it the University Complutense closed down during this visit in response to student demonstrations and we were very much left to our own devices It was natural that we should gravitate to a research topic of common interest This turned out to be the characterization of the phenomenon of finite speed of propagation for nonlin ear reaction convection diffusion equations Brian had just completed some work on this topic for nonlinear diffusion convection while Robert had earlier done the same for nonlinear diffusion absorption There was no question but that we bundle our efforts on the general situation Partial Differential Equations arising from Physics and Geometry Mohamed Ben Ayed, Mohamed Ali Jendoubi, Yomna Rébaï, Hasna Riahi, Hatem Zaag, 2019-05-02 Presents the state of the art in PDEs including the latest research and short courses accessible to graduate students Regularity Theory for Mean Curvature Flow Klaus Ecker, 2012-12-06 Devoted to the motion of surfaces for which the normal velocity at every point is given by the mean curvature at that point this geometric heat flow process is called mean curvature flow Mean curvature flow and related geometric evolution equations are important tools in mathematics and mathematical physics Recent Progress In Conformal Geometry Abbas Bahri, Yongzhong Xu, 2007-04-05 This book presents a new front of research in conformal geometry on sign changing Yamabe type problems and contact form geometry in particular New ground is broken with the establishment of a Morse lemma at infinity for sign changing Yamabe type problems. This family of problems thought to be out of reach a few years ago becomes a family of problems which can be studied the book lays the foundation for a program of research in this direction In contact form geometry a cousin of symplectic geometry the authors prove a fundamental result of compactness in a variational problem on Legrendrian curves which allows one to define a homology associated to a contact structure and a vector field of its kernel on a three dimensional manifold The homology is invariant under deformation of the contact form and can be read on a sub Morse complex of the Morse complex of the variational problem built with the periodic orbits of the Reeb vector field This book introduces therefore a practical tool in the field and this homology becomes computable a Perspectives in Nonlinear Partial Differential Equations Henri Berestycki, 2007 In celebration of Haim Brezis s 60th birthday a conference was held at the Ecole Polytechnique in Paris with a program testifying to Brezis s wide ranging influence on nonlinear analysis and partial differential equations The articles in this volume are primarily from that conference They present a rare view of the state of the art of many aspects of nonlinear PDEs as well as describe new directions that are being opened up in this field. The articles written by mathematicians at the center

of current developments provide somewhat more personal views of the important developments and challenges

**Nonlinear Elliptic and Parabolic Problems** Michel Chipot,2005-10-18 The present volume is dedicated to celebrate the work of the renowned mathematician Herbert Amann who had a significant and decisive influence in shaping Nonlinear Analysis Most articles published in this book which consists of 32 articles in total written by highly distinguished researchers are in one way or another related to the scientific works of Herbert Amann The contributions cover a wide range of nonlinear elliptic and parabolic equations with applications to natural sciences and engineering Special topics are fluid dynamics reaction diffusion systems bifurcation theory maximal regularity evolution equations and the theory of function spaces

**Fuchsian Reduction** Satyanad Kichenassamy,2007-09-14 This four part text beautifully interweaves theory and applications in Fuchsian Reduction Background results in weighted Sobolev and Holder spaces as well as Nash Moser implicit function theorem are provided Most chapters contain a problem section and notes with references to the literature This volume can be used as a text in graduate courses in PDEs and or Algebra or as a resource for researchers working with applications to Fuchsian Reduction The comprehensive approach features the inclusion of problems and bibliographic notes

Nonlinear Oscillations of Hamiltonian PDEs Massimiliano Berti, 2007-10-01 Many partial differential equations PDEs that arise in physics can be viewed as infinite dimensional Hamiltonian systems. This monograph presents recent existence results of nonlinear oscillations of Hamiltonian PDEs particularly of periodic solutions for completely resonant nonlinear wave equations The text serves as an introduction to research in this fascinating and rapidly growing field Graduate students and researchers interested in variational techniques and nonlinear analysis applied to Hamiltonian PDEs will find inspiration in the book Octogon Mathematical Magazine ,2004 Mathematical Reviews ,2008 Analele Stiintifice Ale Universitătii "Al. I. Cuza" Din Iasi ,2004 Analele stiintifice ale Universitatii "Al. I. Cuza" din Iasi. Serie nouă Universitatea "Al. I. Cuza" din Iaşi,2004 American Book Publishing Record, 2003 Subject Guide to Books in Print ,1991 Discrete and Continuous Dynamical Systems ,2004 Books in Print Supplement ,2002 **Real and Complex Singularities** Jean-Paul Brasselet, Maria Aparecida Soares Ruas, 2007-01-05 This volume collects papers presented at the eighth S o Carlos Workshop on Real and Complex Singularities held at the IML Marseille July 2004 Like the workshop this collection establishes the state of the art and presents new trends new ideas and new results in all of the branches of singularities Real and Complex Singularities offers a useful summary of leading ideas in singularity theory and inspiration for future research

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