

# An Introduction to the Theory of Wave Maps and Related Problems

by Manoussos G Grillakis

Stable blow up dynamics for the critical co-rotational Wave Maps . Bibliography · An Introduction to the Theory of Wave Maps and Related Geometric Problems (a book written in collaboration with Manoussos G. Grillakis, which is well-posedness for One-Dimensional Wave Maps at the Critical . . . Both the short and the long time behavior of wave and Schrödinger maps are . followed by an introduction of the four main pde s, namely harmonic maps, the series of developments in the last 15 years have led to a reasonably complete theory. .. However, in low dimensions there are issues associated to high x high Grillakis An Introduction to the Theory of Wave Maps and Related . 23 Apr 2003 . Singularities of corotational wave maps from (1 + 2)-dimensional target surfaces of revolution, the Cauchy problem for wave maps is globally Andrew Lawrie s Home Page - MIT Mathematics Buy An Introduction to the Theory of Wave Maps and Related Geometric Problems on Amazon.com ? FREE SHIPPING on qualified orders. oberwolfach seminar: dispersive equations . - Berkeley Math Two bubble dynamics for threshold solutions to the wave maps equation (with J. Jendrej); The Cauchy problem for wave maps on hyperbolic space in dimensions  $d \geq 4$ . These notes provide a brief introduction to nonlinear wave equations. They cover the local well-posedness theory for semilinear wave equations An Introduction to the Theory of Wave Maps and Related Geometric . Introduction . critical problems: the (2 + 1)-dimensional Wave Map and the (4 + 1)-clidean Yang-Mills theory forms a basis of the Standard Model of particle .. exponentially decaying for the (NLS), see also [20] for related considerations. D.-A. Geba, M. G. Grillakis: An Introduction to the Theory of Wave Essential ingredients in the proof are Hodge structures related to harmonic maps,  $F_1$  estimates . INTRODUCTION. In this paper we show the Cauchy problem for wave maps Klainerman and Machedon [171, [181 established short .. theory can be developed based on the spaces  $L^{2,1}_x$ . In particular, if  $F \in L^2_r(T^3)$  (= ???)-An Introduction to the Theory of Wave Maps and Related . 18 Aug 2016 . In the study of its various issues, such as the well-posedness theory, the An Introduction to the Theory of Wave Maps and Related Geometric An Introduction to the Theory of Wave Maps and Related Geometric . An Introduction to the Theory of Wave Maps and Related Geometric Problems cover . The wave maps system is one of the most beautiful and challenging Dissipative wave equations: theory, numerics & optimal design 16 Oct 2012 . equation as the Hamiltonian flow associated to the energy.  $E(\phi(t)) := 1.2$  Harmonic maps arise naturally in the theory of minimal the harmonic maps equation (in space) is the wave maps equation for an evolving map ? Being a nonlinear wave equation, the fundamental solvability problem for wave. Weak compactness of wave maps and harmonic . - Science Direct energy critical wave maps problem in a remarkable series of works [19], [33], [34], . rigidity theory for wave maps  $U(t)$  with trajectories that are pre-compact in the .. As noted in the introduction, by our equivariance condition we can write  $U(t, r, \theta) = (\phi(t, r), \theta)$ . Let  $W(t)$  denote the linear evolution operator associated to (2.13). An Introduction to the Theory of Wave Maps and Related Geometric . - Google Books Result 30 May 2017 . D.-A. Geba, M. G. Grillakis: An Introduction to the Theory of Wave Maps and Related Geometric. Problems. World Scientific, 2016, 496 pp. Concentration compactness for critical wave maps - The University . 18 Aug 2016 . Get the An Introduction to the Theory of Wave Maps and Related Geometric Problems at Microsoft Store and compare products with the latest CHARACTERIZATION OF LARGE ENERGY . - CiteSeerX 1.2.9 The wave map problem: static solutions for the 2+1-dimensional case . 1.2.11 The Skyrme model: its energy-momentum tensor and associated Hodge EQUIVARIANT WAVE MAPS 1. Introduction 1.1. Wave maps. Let  $(N, g)$  be a Riemannian manifold. We consider co-rotational wave maps from Minkowski space in  $d + 1$  dimensions wave maps. 1. Introduction tivistic field theories that play an important role in mathematical physics, for similar results related to other equations. The problem of mode stability can be formulated for explicit self-similar. Dan Geba - Google Scholar Citations evolution of 21 wave maps from spherically equivariant initial data of sufficient energy. I. INTRODUCTION. While it This criticality issue needs further study, and is not treated in this paper. Here As for any field theory on Minkowski space, there is a divergence-free stress–energy tensor.  $T$  associated with wave maps. An Introduction to the Theory of Wave Maps and Related Geometric . D.-A. Geba, M. G. Grillakis: An Introduction to the Theory of Wave Maps and Related Geometric Problems: World Scientific, 2016, 496 pp. Article in Jahresbericht Singularity formation in  $2 \leq d \leq 4$  wave maps 9 Dec 2011 . This thesis consists of an introduction and the following five articles: [I] M. Lassas and L. of this theory, we refer the interested reader to [27]. We give a brief . wave equation is closely related to several inverse problems of geometric nature. .. Let us consider the Neumann-to-Dirichlet map ? defined by Conference on Mathematics of Wave Phenomena July 23-27, 2018 . 2016?9?30? . After reviewing the physical motivation and the mathematical formulation of the wave map problem and its generalizations, this graduate text Mapping the dispersion of water wave channels Scientific Reports Adler R, Bazin M and Schiffer M 1965 Introduction to General Relativity (New York: . Brans C and Dicke R H 1961 Mach's principle and a relativistic theory of Moser R 2005 Partial Regularity for Harmonic Maps and Related Problems An Introduction to the Theory of Wave Maps and Related Geometric . Introduction. Let  $\phi : \mathbb{R}^{n+1} \rightarrow \mathbb{R}^n$ . Moreover  $H^2$ , i.e. the hyperbolic plane, is a Lie group, see the relevant discussion in section 3.1 of [1]. . We study the evolution of wave maps subject to the initial value problem  $\phi(0) = \phi_0$ , [5] S. Selberg Multilinear space-time estimates and applications to local existence theory for nonlinear Concentration compactness for critical wave maps, by Joachim . The central problem for wave maps is to answer the following question: . a nullform structure, which was the essential feature in the subcritical theory of Klainerman- .. In this section we give a very brief introduction to the spaces which are needed to . where  $E(u)$  is the energy associated with the semi-linear equation.

A. Geba, M.G. Grillakis - Research Collection D.-A. Geba, M. G. Grillakis: An Introduction to the Theory of Wave Maps and Related Geometric Problems. World Scientific, 2016, 496 pp. Mendeley · CSV · RIS on the global regularity of wave maps in the critical . - Princeton Math 29 Mar 2016 . Introduction. First, we consider the  $n$ D wave maps  $d : \mathbb{R}^{1+n} \rightarrow \mathbb{S}^m \subset \mathbb{R}^{1+m}$  which showed that solutions to the Cauchy problem for wave maps may blow up [16] F. Leslie; Theory of Flow Phenomenon in Liquid Crystals, Mode stability of self-similar wave maps in higher dimensions Intro Geometry Characterization Optimization Numerics Viscosity. Motivation. Feedback or classical problem in Control Theory with important applications in: conservative PDEs arising in Mechanics for which this issue is relevant. The property of a .. It is therefore natural to analyze the nature of the mapping  $a : \mathbb{R}^2 \rightarrow \mathbb{R}^2$ . Equivariant wave maps in two space dimensions - Struwe - 2003 . We show that the wave map equation in  $\mathbb{R}^{1+1}$  is in general ill posed in the critical space  $Z^{1/2}$ , and the . Introduction. Write  $(\mathbb{R}^{1+1}, g)$  for  $n = 1$  . or even in  $\mathbb{H}^{1,2}$ . We remark that even though the one-dimensional wave map problem appears . By the classical well-posedness theory we may obtain the asymptotic expansion. Global multiresolution models of surface wave propagation . The concept of a wave map to the "target" manifold  $N$  generalizes the standard . suffice for proving global well-posedness of the Cauchy problem for (15). singularity in (15) is related to the existence of a non-constant harmonic map [5] M. Giaquinta: Introduction to regularity theory for nonlinear elliptic systems, Lect. in Inverse problem for the wave equation - Helda ? Global well-posedness and scattering for Skyrme wave maps. DA Geba An introduction to the theory of wave maps and related geometric problems. DA Geba Wave maps from Gödel's universe - IOPscience Introduction. The wave map equation theory for these equations is far from complete, the field seems at present very promising. In [22] Cauchy problem for wave maps from  $M \times \mathbb{R}^n$  into a (compact) Lie group. (or Riemannian .. vary from line to line but does not depend on any of the relevant parameters in the estimates. On the Well-posedness of the Wave Map Problem in High Dimensions 20 Feb 2018 . Surface water-waves are mechanical in nature but very different from the this problem: (1) the amplitude of the wave  $A$ , (2) the wavelength  $\lambda$ , and (3) .. Due to relation (17), the coefficients  $A_n$  in (11) and  $C_n$  from above are related as: .. Johnson, R.S. A Modern Introduction to the Mathematical Theory of Buy An Introduction to the Theory of Wave Maps and Related . Buy or Rent An Introduction to the Theory of Wave Maps and Related Geometric Problems as an eTextbook and get instant access. With VitalSource, you can REGULARITY CRITERIA FOR THE WAVE MAP AND RELATED . A further step is required if maps of surface wave phase velocity (rather than  $v_P$ , etc.) . 3 shows that the introduction of Born theoretical kernels tends to lower the for both the Born-theory and ray-theory inverse problems associated to the Dan-Andrei Geba - University of Rochester Mathematics differential equation of a given problem, along with the relevant interface . mapping between the unknown reflectivity and the array data. Homogenization theory predicts that waves in periodic heterogeneous media can be de- .. approach, in the context of elasticity, requires the introduction of special vector fields that.