

Vers Les Maths

This text on contact topology is a comprehensive introduction to the subject, including recent striking applications in geometric and differential topology: Eliashberg's proof of Cerf's theorem via the classification of tight contact structures on the 3-sphere, and the Kronheimer-Mrowka proof of property P for knots via symplectic fillings of contact 3-manifolds. Starting with the basic differential topology of contact manifolds, all aspects of 3-dimensional contact manifolds are treated in this book. One notable feature is a detailed exposition of Eliashberg's classification of overtwisted contact structures. Later chapters also deal with higher-dimensional contact topology. Here the focus is on contact surgery, but other constructions of contact manifolds are described, such as open books or fibre connected sums. This book serves both as a self-contained introduction to the subject for advanced graduate students and as a reference for researchers.

? Maths Grande Section ? Préparez-votre enfant au CP en lui offrant de solides bases en mathématiques. Avec ce cahier d'activités et d'exercices de 77 pages sur le thème de l'espace, les mathématiques se veulent distrayantes et ludiques ! Les grandes thématiques du programme de grande section sont abordées : Calculer Compter Associer un nombre à son écriture Comparer des collections Connaitre la suite des nombres Savoir dénombrer La suite des nombres jusqu'à 40 Lire et écrire des nombres Déplacement sur un cadrillage Plus, moins et égale Plus petit - plus grand Algorithmes Tableau à deux entrées La Symétrie Les formes géométriques Décoder un parcours Le temps qui passe En haut - en bas Devant - derrière Au-dessus - au-dessous Dedans - dehors La gauche - la droite Les exercices mettent en scènes des personnages et des objets de la conquête spatiale afin de faciliter l'apprentissage et peut-être faire naître des vocations ! Votre enfant trouvera également des dessins à colorier sur le thème de l'espaces, ainsi que des illustrations des planètes du système solaire pour agrémenter son voyage vers les mathématiques. ??? En offrant ce cahier d'activités, votre enfant sera le premier à calculer sur la lune ! ??? Ce cahier existe également sur le thème des animaux, cliquez sur le nom de l'auteur pour le consulter !

In the study of algebraic/analytic varieties a key aspect is the description of the invariants of their singularities. This book targets the challenging non-isolated case. Let f be a complex analytic hypersurface germ in three variables whose zero set has a 1-dimensional singular locus. We develop an explicit procedure and algorithm that describe the boundary M of the Milnor fiber of f as an oriented plumbed 3-manifold. This method also provides the characteristic polynomial of the algebraic monodromy. We then determine the multiplicity system of the open book decomposition of M cut out by the argument of g for any complex analytic germ g such that the pair (f,g) is an ICIS. Moreover, the horizontal and vertical monodromies of the transversal type singularities associated with the singular locus of f and of the ICIS (f,g) are also described. The theory is supported by a substantial amount of examples, including homogeneous and composed singularities and suspensions. The properties peculiar to M are also emphasized.

AWM Research Symposium, Houston, TX, April 2019

In the Tradition of Thurston

Tricolore 4

Lectures Given at the C.I.M.E. Summer School Held in Cetraro, Italy, September 2-10, 2003

Advances in the Mathematical Sciences

Cahiers Jean - Claude Pecker n°1

Premiers pas vers les maths les chemins de la réussite à l'école maternelle

Presenting the latest findings in topics from across the mathematical spectrum, this volume includes results in pure mathematics along with a range of new advances and novel applications to other fields such as probability, statistics, biology, and computer science. All contributions feature authors who attended the Association for Women in Mathematics Research Symposium in 2015: this conference, the third in a series of biennial conferences organized by the Association, attracted over 330 participants and showcased the research of women mathematicians from academia, industry, and government.

Comment programmer et concevoir des situations d'apprentissages mathématiques en petite section, en moyenne section et en grande section ? Comment amener les élèves à résoudre des problèmes dès l'école maternelle ? Comment automatiser les compétences numériques des élèves ? Comment associer la pratique du langage aux activités mathématiques ? Vers les maths Petite Section répond concrètement et efficacement à ces problématiques.

Dedicated to Jean-Paul Brasselet on His 60th Birthday

An Introduction to Contact Topology

Histoire de la Conquête de L'Angleterre Par Les Normands

Regards sur cinquante ans de recherche (1967-2017)

De Ses Causes Et de Ses Suites Jusqu'a Nos Jours en Angleterre, en Ecosse, en Irlande Et Sur Le Continent

Cetraro, Italy 2018

The influence of Solomon Lefschetz (1884-1972) in geometry and topology 40 years after his death has been very profound. Lefschetz's influence in Mexican mathematics has been even greater. In this volume, celebrating 50 years of mathematics at Cinvestav-México, many of the fields of geometry and topology are represented by some of the leaders of their respective fields. This volume opens with Michael Atiyah reminiscing about his encounters with Lefschetz and México. Topics covered in this volume include symplectic flexibility, Chern-Simons theory and the theory of classical theta functions, toric topology, the Beilinson conjecture for finite-dimensional associative algebras, partial monoids and Dold-Thom functors, the weak b-principle, orbit configuration spaces, equivariant extensions of differential forms for noncompact Lie groups, dynamical systems and categories, and the Nahm pole boundary condition.

La mise en oeuvre réussie d'une évaluation nationale des acquis scolaires est une tâche complexe requérant des connaissances, des compétences, et des ressources considérables. Les retombées des évaluations nationales correctement réalisées peuvent être substantielles en termes de qualité de l'information fournie sur les niveaux de performance des élèves ainsi que sur les facteurs, scolaires ou non, susceptibles de contribuer à les améliorer. Inversement, le « coût » d'une évaluation nationale mal réalisée peut être

une information inexacte sur les niveaux de performance des élèves et les facteurs associés. Une mise en œuvre de qualité peut accroître la confiance des responsables des politiques et des autres parties prenantes dans la validité des constatations de l'évaluation. Elle peut également augmenter la probabilité d'utilisation des résultats de l'évaluation nationale pour mettre au point de solides plans et programmes en vue d'améliorer la qualité de l'enseignement et le rendement de l'apprentissage des élèves. Troisième volume d'une série de cinq, Mettre en œuvre une évaluation nationale des acquis scolaires, se concentre sur les tâches pratiques requises par la mise en œuvre d'une évaluation nationale à grande échelle. Ce manuel fournit des instructions détaillées étape par étape sur la logistique, l'échantillonnage, la préparation et la gestion des données, ainsi que l'analyse. Les lecteurs sont guidés à travers les différentes étapes de l'échantillonnage en travaillant sur un ensemble de tâches concrètes présentées dans le texte et en utilisant les fichiers de données fournis dans le CD d'accompagnement. Ce volume est principalement destiné aux équipes chargées de conduire une évaluation nationale dans des pays en développement et émergents.

Different Faces of Geometry - edited by the world renowned geometers S. Donaldson, Ya. Eliashberg, and M. Gromov - presents the current state, new results, original ideas and open questions from the following important topics in modern geometry: These apparently diverse topics have a common feature in that they are all areas of exciting current activity. The Editors have attracted an impressive array of leading specialists to author chapters for this volume: G. Mikhalkin (USA-Canada-Russia), V.D. Milman (Israel) and A.A. Giannopoulos (Greece), C. LeBrun (USA), Ko Honda (USA), P. Ozsvath (USA) and Z. Szabo (USA), C. Simpson (France), D. Joyce (UK) and P. Seidel (USA), and S. Bauer (Germany). One can distinguish various themes running through the different contributions. There is some emphasis on invariants defined by elliptic equations and their applications in low-dimensional topology, symplectic and contact geometry (Bauer, Seidel, Ozsvath and Szabo). These ideas enter, more tangentially, in the articles of Joyce, Honda and LeBrun. Here and elsewhere, as well as explaining the rapid advances that have been made, the articles convey a wonderful sense of the vast areas lying beyond our current understanding. Simpson's article emphasizes the need for interesting new constructions (in that case of Kahler and algebraic manifolds), a point which is also made by Bauer in the context of 4-manifolds and the 11/8 conjecture. LeBrun's article gives another perspective on 4-manifold theory, via Riemannian geometry, and the challenging open questions involving the geometry of even well-known 4-manifolds. There are also striking contrasts between the articles. The authors have taken different approaches: for example, the thoughtful essay of Simpson, the new research results of LeBrun and the thorough expositions with homework problems of Honda. One can also ponder the differences in the style of mathematics. In the articles of Honda, Giannopoulos and Milman, and Mikhalkin, the geometry is present in a very vivid and tangible way; combining respectively with topology, analysis and algebra. The papers of Bauer and Seidel, on the other hand, makes the point that algebraic and algebro-topological abstraction (triangulated categories, spectra) can play an important role in very unexpected ways in concrete geometric problems. - From the Preface by the Editors

PS

**Cahier d'activités et d'exercices de Mathématiques Pour Bien Préparer le CP - Sur le Thème de l'espace - Pour Fille et Garçon - GS
Vers les maths**

Handbook of Knot Theory

Proceedings of the Clay Mathematics Institute 2004 Summer School, Alfréd Rényi Institute of Mathematics, Budapest, Hungary, June 5-26, 2004

Jamais les premiers apprentissages numériques n'ont fait l'objet d'autant de recherches scientifiques. Le savoir dans ce domaine évolue vite : travaux sur le rôle de la langue d'apprentissage (suivant que les enfants sont anglophones ou francophones), recherches sur les difficultés durables en mathématiques, etc. En s'appuyant sur les résultats les plus récents, ce livre a trois ambitions : présenter les conditions de la réussite à l'école maternelle ; comment favoriser la compréhension des nombres et le progrès vers le calcul ? aider les parents et les enseignants à prévenir l'échec en mathématiques ; permettre aux enseignants et aux formateurs de se situer face à une pluralité de propositions pédagogiques. Depuis longtemps, les pédagogues s'élèvent contre l'idée qu'il y aurait des enfants doués en mathématiques et d'autres qui ne le seraient pas. Et pourtant cette idée persiste dans l'opinion. La raison de cette discordance nous est révélée par les recherches sur les difficultés durables en mathématiques chez les enfants de 8 à 12 ans dont les procédures de calcul sont très déficientes : ces enfants ont mal compris ce qu'on leur enseignait quand ils étaient tout petits à l'école maternelle ; ils ont mal compris le comptage des objets. L'explication de leur échec en mathématiques remonte donc si loin dans leur passé scolaire que certains sont tentés de le faire remonter plus loin encore, jusqu'aux gènes... Mais au lieu de décréter que ces enfants sont peu doués pour les mathématiques, considérons plutôt qu'ils n'ont pas réussi leur première rencontre avec les nombres et essayons d'aménager autrement cette première rencontre.

The latest edition of the best-selling and trusted Tricolore 4, is a high ability course that includes support for all the 2016 GCSE specifications and IGCSE. It offers a blend of print and digital resources, providing your students with the right content they'll need to manipulate language confidently and prepare them thoroughly for their exams.

This volume, in honor of Yakov Eliashberg, gives a panorama of some of the most fascinating recent developments in symplectic, contact and gauge theories. It contains research papers aimed at experts, as well as a series of skillfully written surveys accessible for a broad geometrically oriented readership from the graduate level onwards. This collection will serve as an enduring source of information and ideas for those who want to enter this exciting area as well as for experts.

Comment réussir sa prépa scientifique

Symplectic 4-Manifolds and Algebraic Surfaces

Herméneutique sacrée, ou Introduction à l'Écriture sainte en général, et en particulier à chacun des livres de l'Ancien et du Nouveau Testament. Traduit du Latin par J. J. Pacaud. Troisième édition, revue, corrigée et augmentée par M. l'Abbé Lionnet

Complex Non-Kähler Geometry

Research from the 2015 Association for Women in Mathematics Symposium

Maths Grande Section - Maternelle - Géométrie - Calcul - Mesures et Grandeurs - Numération - Logique - Repérage Spatial

Knot theory is a classical area of low-dimensional topology, directly connected with the theory of three-manifolds and smooth four-manifold topology. In recent years, the subject has undergone transformative changes thanks to its connections with a number of other mathematical disciplines, including gauge theory; representation theory and categorification; contact geometry; and the theory of pseudo-holomorphic curves. Starting from the combinatorial point of view on knots using their grid diagrams, this book serves as an introduction to knot theory, specifically as it relates to some of the above developments. After a brief overview of the background material in the subject, the book gives a self-contained treatment of knot Floer homology from the point of view of grid diagrams. Applications include computations of the unknotting number and slice genus of torus knots (asked first in the 1960s and settled in the 1990s), and tools to study variants of knot theory in the presence of a contact structure. Additional topics are presented to prepare readers for further study in holomorphic methods in low-dimensional topology, especially Heegaard Floer homology. The book could serve as a textbook for an advanced undergraduate or part of a graduate course in knot theory. Standard background material is sketched in the text and the appendices.

IMA Volumes 135: Transport in Transition Regimes and 136: Dispersive Transport Equations and Multiscale Models focus on the modeling of processes for which transport is one of the most complicated components. This includes processes that involve a wide range of length scales over different spatio-temporal regions of the problem, ranging from the order of mean-free paths to many times this scale. Consequently, effective modeling techniques require different transport models in each region. The first issue is that of finding efficient simulations techniques, since a fully resolved kinetic simulation is often impractical. One therefore develops homogenization, stochastic, or moment based subgrid models. Another issue is to quantify the discrepancy between macroscopic models and the underlying kinetic description, especially when dispersive effects become macroscopic, for example due to quantum effects in semiconductors and superfluids. These two volumes address these questions in relation to a wide variety of application areas, such as semiconductors, plasmas, fluids, chemically reactive gases, etc.

This book consists of 16 surveys on Thurston's work and its later development. The authors are mathematicians who were strongly influenced by Thurston's publications and ideas. The subjects discussed include, among others, knot theory, the topology of 3-manifolds, circle packings, complex projective structures, hyperbolic geometry, Kleinian groups, foliations, mapping class groups, Teichmüller theory, anti-de Sitter geometry, and co-Minkowski geometry. The book is addressed to researchers and students who want to learn about Thurston's wide-ranging mathematical ideas and their impact. At the same time, it is a tribute to Thurston, one of the greatest geometers of all time, whose work extended over many fields in mathematics and who had a unique way of perceiving forms and patterns, and of communicating and

writing mathematics.

Different Faces of Geometry

An Advanced French Course - Teacher's Book

Les femmes dans l'histoire du CNRS

Geometry and Topology

La treizième pierre

Grid Homology for Knots and Links

This book contains 23 papers of open problems and directions about mapping class groups and related topics. The papers focus on aspects deeply connected with geometric topology, combinatorial group theory and surrounding areas.

The Eighth International Conference on Hyperbolic Problems - Theory, Numerics, Applications, was held in Magdeburg, Germany, from February 27 to March 3, 2000. It was attended by over 220 participants from many European countries as well as Brazil, Canada, China, Georgia, India, Israel, Japan, Taiwan, and the USA. There were 12 plenary lectures, 22 further invited talks, and around 150 contributed talks in parallel sessions as well as posters. The speakers in the parallel sessions were invited to provide a poster in order to enhance the dissemination of information. Hyperbolic partial differential equations describe phenomena of material or wave transport in physics, biology and engineering, especially in the field of fluid mechanics. Despite considerable progress, the mathematical theory is still struggling with fundamental open problems concerning systems of such equations in multiple space dimensions. For various applications the development of accurate and efficient numerical schemes for computation is of fundamental importance. Applications touched in these proceedings concern one-phase and multiphase fluid flow, phase transitions, shallow water dynamics, elasticity, extended thermodynamics, electromagnetism, classical and relativistic magnetohydrodynamics, cosmology. Contributions to the abstract theory of hyperbolic systems deal with viscous and relaxation approximations, front tracking and wellposedness, stability of shock profiles and multi-shock patterns, traveling fronts for transport equations. Numerically oriented articles study finite difference, finite volume, and finite element schemes, adaptive, multiresolution, and artificial dissipation methods.

Comment programmer et concevoir des situations d'apprentissages mathématiques en petite section, en moyenne section et en grande section ? Comment amener les élèves à résoudre des problèmes dès

l'école maternelle ? Comment automatiser les compétences numériques des élèves ? Comment associer la pratique du langage aux activités mathématiques ? Vers les maths Moyenne Section répond concrètement et efficacement à ces problématiques.

Mettre en oeuvre une évaluation nationale des acquis scolaires

Milnor Fiber Boundary of a Non-isolated Surface Singularity

Eighth International Conference in Magdeburg, February/March 2000

50 Years of Mathematics at CINVESTAV

Herméneutique sacrée, etc. Quatrième édition ... augmentée par A. Lionnet

Triangle 9

Au point, the leading advanced-level French course, has been fully revised and updated, to match the requirements of the new AS and A GCE specifications.

This volume highlights the mathematical research presented at the 2019 Association for Women in Mathematics (AWM) Research Symposium held at Rice University, April 6-7, 2019. The symposium showcased research from women across the mathematical sciences working in academia, government, and industry, as well as featured women across the career spectrum: undergraduates, graduate students, postdocs, and professionals.

The book is divided into eight parts, opening with a plenary talk and followed by a combination of research paper contributions and survey papers in the different areas of mathematics represented at the symposium: algebraic combinatorics and graph theory algebraic biology commutative algebra analysis, probability, and PDEs topology applied mathematics mathematics education

*This book is a survey of current topics in the mathematical theory of knots. For a mathematician, a knot is a closed loop in 3-dimensional space: imagine knotting an extension cord and then closing it up by inserting its plug into its outlet. Knot theory is of central importance in pure and applied mathematics, as it stands at a crossroads of topology, combinatorics, algebra, mathematical physics and biochemistry. * Survey of mathematical knot theory * Articles by leading world authorities * Clear exposition, not over-technical * Accessible to readers with undergraduate background in mathematics*

Dispersive Transport Equations and Multiscale Models

Breadth in Contemporary Topology

Savoir-Faire

Premiers pas vers les maths

Deformations of Surface Singularities

Singularity Theory

Savoir-Faire meaning know-how or skill, is a wide-ranging language course for undergraduate learners of French. It focuses on communication skills in areas that graduates will need if they are to use their knowledge of French

professionally, focusing particularly on: * report writing * translating and interpreting * making presentations. Savoir-Faire comprises a course book, teacher's book and three 60-minute audio cassettes. Each of the ten chapters deals with a distinct topic and set of skills and is built around the audio recordings and written texts, all taken from authentic sources. Although designed with first-year students in mind, with its emphasis on transferable skills, Savoir-Faire could be successfully adapted for use with second and final-year students.

Collecting together the lecture notes of the CIME Summer School held in Cetraro in July 2018, the aim of the book is to introduce a vast range of techniques which are useful in the investigation of complex manifolds. The school consisted of four courses, focusing on both the construction of non-Kähler manifolds and the understanding of a possible classification of complex non-Kähler manifolds. In particular, the courses by Alberto Verjovsky and Andrei Teleman introduced tools in the theory of foliations and analytic techniques for the classification of compact complex surfaces and compact Kähler manifolds, respectively. The courses by Sebastien Picard and Sławomir Dinew focused on analytic techniques in Hermitian geometry, more precisely, on special Hermitian metrics and geometric flows, and on pluripotential theory in complex non-Kähler geometry.

Modern approaches to the study of symplectic 4-manifolds and algebraic surfaces combine a wide range of techniques and sources of inspiration. Gauge theory, symplectic geometry, pseudoholomorphic curves, singularity theory, moduli spaces, braid groups, monodromy, in addition to classical topology and algebraic geometry, combine to make this one of the most vibrant and active areas of research in mathematics. It is our hope that the five lectures of the present volume given at the C.I.M.E. Summer School held in Cetraro, Italy, September 2-10, 2003 will be useful to people working in related areas of mathematics and will become standard references on these topics. The volume is a coherent exposition of an active field of current research focusing on the introduction of new methods for the study of moduli spaces of complex structures on algebraic surfaces, and for the investigation of symplectic topology in dimension 4 and higher.

Évaluations nationales des acquis scolaires, Volume 3

Au Point

New Perspectives and Challenges in Symplectic Field Theory

MS

Uvea

Advances in Mathematical Sciences

Comment programmer et concevoir des situations d'apprentissages mathématiques en petite section, en moyenne section et en grande section ? Comment amener les élèves à résoudre des problèmes dès l'école maternelle ? Comment automatiser les

compétences numériques des élèves ? Comment associer la pratique du langage aux activités mathématiques ? Vers les maths Grande Section répond concrètement et efficacement à ces problématiques.

The present publication contains a special collection of research and review articles on deformations of surface singularities, that put together serve as an introductory survey of results and methods of the theory, as well as open problems and examples. The aim is to collect material that will help mathematicians already working or wishing to work in this area to deepen their insight and eliminate the technical barriers in this learning process. Additionally, we introduce some material which emphasizes the newly found relationship with the theory of Stein fillings and symplectic geometry. This links two main theories of mathematics: low dimensional topology and algebraic geometry. The theory of normal surface singularities is a distinguished part of analytic or algebraic geometry with several important results, its own technical machinery, and several open problems. Recently several connections were established with low dimensional topology, symplectic geometry and theory of Stein fillings. This created an intense mathematical activity with spectacular bridges between the two areas. The theory of deformation of singularities is the key object in these connections.

Les cahiers Jean - Claude Pecker se proposent de publier de nombreux textes ainsi que d'autres uvres la plupart du temps inédits. Le nombre de n a paraitre de ces cahiers ne peut etre defini a l'avance et j'espere symboliquement qu'il sera infini. Daniel Ziv, editeur. Kajeroj Jean - Claude Pecker intencas eldoni multaj tekstoj kaj aliaj verkoj de la plej inedito tempo. No La nombro de venontaj el tiuj kajeroj ne povas esti difinita en la anta"

Hyperbolic Problems: Theory, Numerics, Applications

Revue Semestrielle Des Publications Mathematiques

GS

Problems on Mapping Class Groups and Related Topics

les chemins de la réussite à l'école maternelle

The Influence of Solomon Lefschetz in Geometry and Topology

Mathematical gauge theory studies connections on principal bundles, or, more precisely, the solution spaces of certain partial differential equations for such connections. Historically, these equations have come from mathematical physics, and play an important role in the description of the electro-weak and strong nuclear forces. The use of gauge theory as a tool for studying topological properties of four-manifolds was pioneered by the fundamental work of Simon Donaldson in the early 1980s, and was revolutionized by the introduction of the Seiberg-Witten equations in the mid-1990s. Since the birth of the subject, it has retained its close connection with symplectic topology. The analogy between these two fields of study was further underscored by Andreas Floer's construction of an infinite-dimensional variant of Morse theory that applies in two a priori different contexts: either to define symplectic invariants for pairs of Lagrangian submanifolds of a symplectic manifold, or to define topological invariants for three-manifolds, which fit into a framework for calculating invariants for smooth four-manifolds. `Heegaard Floer homology", the recently-discovered invariant for three- and four-manifolds, comes from an application of

Lagrangian Floer homology to spaces associated to Heegaard diagrams. Although this theory is conjecturally isomorphic to Seiberg-Witten theory, it is more topological and combinatorial in flavor and thus easier to work with in certain contexts. The interaction between gauge theory, low-dimensional topology, and symplectic geometry has led to a number of striking new developments in these fields. The aim of this volume is to introduce graduate students and researchers in other fields to some of these exciting developments, with a special emphasis on the very fruitful interplay between disciplines. This volume is based on lecture courses and advanced seminars given at the 2004 Clay Mathematics Institute Summer School at the Alfred Renyi Institute of Mathematics in Budapest, Hungary. Several of the authors have added a considerable amount of additional material to that presented at the school, and the resulting volume provides a state-of-the-art introduction to current research, covering material from Heegaard Floer homology, contact geometry, smooth four-manifold topology, and symplectic four-manifolds. This volume contains the proceedings of the 2017 Georgia International Topology Conference, held from May 22–June 2, 2017, at the University of Georgia, Athens, Georgia. The papers contained in this volume cover topics ranging from symplectic topology to classical knot theory to topology of 3- and 4-dimensional manifolds to geometric group theory. Several papers focus on open problems, while other papers present new and insightful proofs of classical results. Taken as a whole, this volume captures the spirit of the conference, both in terms of public lectures and informal conversations, and presents a sampling of some of the great new ideas generated in topology over the preceding eight years.

The Singularity School and Conference took place in Luminy, Marseille, from January 24th to February 25th 2005. More than 180 mathematicians from over 30 countries converged to discuss recent developments in singularity theory. The volume contains the elementary and advanced courses conducted by singularities specialists during the conference, general lectures on singularity theory, and lectures on applications of the theory to various domains. The subjects range from geometry and topology of singularities, through real and complex singularities, to applications of singularities.

Les études philoniennes

Floer Homology, Gauge Theory, and Low-Dimensional Topology