UNIVERSITY OF CALIFORNIA, RIVERSIDE
Department of Mathematics

Calendar of Events
For the Week Jan. 4th – Jan. 8th, 2010

TUESDAY, 5th

11:10-12:30PM, SURGE 268	**COHOMOLOGY OF ALGEBRAIC VARIETIES** (Ziv Ran)
12:40-2:00PM, SURGE 284	**LIE THEORY** (Vyjayanthi Chari)
2:10-3:00PM, SURGE 268	**TOPOLOGY** (Stefano Vidussi)
3:40-5:00PM, SURGE 268	**FUNCTIONAL ANALYSIS** (James Stafney, UCR) "The Dirichlet Principle and Balayage"
3:40-5:00PM, SURGE 277	**ALGEBRAIC GEOMETRY** (Ziv Ran)

WEDNESDAY, 6th

10:10-11:00AM, SURGE 268	**COMBINATORIAL NUMBER THEORY** (Mei-Chu Chang)
1:10-2:00PM, SURGE 284	**TOPICS IN PARTIAL DIFFERENTIAL EQUATIONS** (Jim Kelliher, UCR) "Divorcing Pressure from Viscosity"

THURSDAY, 7th

9:40-11:00AM, SURGE 268	**GROUPOIDS SEMINAR** (Aviv Censor) ***Organizational Meeting***
11:10-12:30PM, SURGE 268	**FRACTAL RESEARCH GROUP** (Michel Lapidus) ***Organizational Meeting***
11:10-12:30PM, SURGE 277	**COHOMOLOGY OF ALGEBRAIC VARIETIES** (Ziv Ran)
1:10-2:00PM, SURGE 277	**OPERATOR ALGEBRAS & RELATED TOPICS** (Marta Asaeda) ***Organizational Meeting***
12:40-2:00PM, SURGE 284	**LIE THEORY** (Vyjayanthi Chari)
2:10-3:00PM, SURGE 268	**TOPOLOGY** (Stefano Vidussi)
3:40-5:00PM, SURGE 277	**ALGEBRAIC GEOMETRY** (Ziv Ran)
3:40-5:00PM, SURGE 268	**MATHEMATICAL PHYSICS** (Michel Lapidus) ***Organizational Meeting***

FRIDAY, 8th

11:10-12:00PM, SURGE 284	**DIFFERENTIAL GEOMETRY** (Abul Masood-ul-Alam, Sacramento) "Proof that Static Stellar Models are Spherical"
12:10-1:00PM, SURGE 268	**COBORDISM & TOPOLOGICAL FIELD THEORIES** (Julie Bergner, UCR) "Towards a Precise Definition of (∞,n)-categories"
3:10-4:00PM, SURGE 268	**COMMUTATIVE ALGEBRA** (***CANCELED***) ***THIS SEMINAR IS CANCELED FOR THIS WEEK***

UNIVERSITY OF CALIFORNIA, RIVERSIDE
Department of Mathematics

Calendar of Events
For the Week Jan 11th – 15th, 2010

TUESDAY, 12th

11:10-12:30PM, SURGE 268	**COHOMOLOGY OF ALGEBRAIC VARIETIES** (Ziv Ran)
12:40-2:00PM, SURGE 284	**LIE THEORY** (Vyjayanthi Chari)
2:10-3:00PM, SURGE 268	**TOPOLOGY** (Stefano Vidussi)
3:40-5:00PM, SURGE 268	**FUNCTIONAL ANALYSIS** (James Stafney) "Balayage and the Generalized Dirichlet Problem"
3:40-5:00PM, SURGE 277	**ALGEBRAIC GEOMETRY** (Ziv Ran)

WEDNESDAY, 13th

10:10-11:00AM, SURGE 268	**COMBINATORIAL NUMBER THEORY** (Mei-Chu Chang)
1:10-2:00PM, SURGE 284	**TOPICS IN PARTIAL DIFFERENTIAL EQUATIONS** (Qi Zhang)

THURSDAY, 14th

9:40-11:00AM, SURGE 268	**GROUPOIDS SEMINAR** (Jacob West) "The Fudamental Groupoid Revisited"
11:10-12:30PM, SURGE 268	**FRACTAL RESEARCH GROUP** (Michel Lapidus) ***CANCELED – AMS / MMA Meeting***
11:10-12:30PM, SURGE 277	**COHOMOLOGY OF ALGEBRAIC VARIETIES** (Ziv Ran)
1:10-2:00pm, SURGE 277	**OPERATOR ALGEBRAS & RELATED TOPICS** (Ricky Han) "A Planar Algebra Construction of Haagerup Subfactor (cont.)"
12:40-2:00PM, SURGE 284	**LIE THEORY** (Vyjayanthi Chari)
2:10-3:00PM, SURGE 268	**TOPOLOGY** (Stefano Vidussi)
3:40-5:00PM, SURGE 277	**ALGEBRAIC GEOMETRY** (Ziv Ran)
3:40-5:00PM, SURGE 268	**MATHEMATICAL PHYSICS** (Michel Lapidus) ***CANCELED – AMS / MMA Meeting***

FRIDAY, 15th

11:10-12:00PM, SURGE 284	**DIFFERENTIAL GEOMETRY** (Yat-Sun Poon) ***CANCELED***
12:10-1:00PM, SURGE 268	**COBORDISM & TOPOLOGICAL FIELD THEORIES** (Julie Bergner) ***CANCELED***
3:10-4:00PM, SURGE 268	**COMMUTATIVE ALGEBRA** (David Rush)

UNIVERSITY OF CALIFORNIA, RIVERSIDE
Department of Mathematics

Calendar of Events
For the Week 18th – 22nd, 2010

TUESDAY, 19th

11:10-12:30PM, SURGE 268 — **COHOMOLOGY OF ALGEBRAIC VARIETIES** (Ziv Ran)

12:40-2:00PM, SURGE 284 — **LIE THEORY** (Vyjayanthi Chari)

2:10-3:00PM, SURGE 268 — **TOPOLOGY** (Stefano Vidussi)

3:40-5:00PM, SURGE 268 — **FUNCTIONAL ANALYSIS** (James Stafney, UCR)
"Balayage and the Generalized Dirichlet Problem"

3:40-5:00PM, SURGE 277 — **ALGEBRAIC GEOMETRY** (K. Lee, UCR)
"Elementary Problems from Ch. 1 of Arbarello et al."

WEDNESDAY, 20th

10:10-11:00AM, SURGE 268 — **COMBINATORIAL NUMBER THEORY** (Mei-Chu Chang)

1:10-2:00PM, SURGE 284 — **TOPICS IN PARTIAL DIFFERENTIAL EQUATIONS** (Edward Burkard, UCR)
"Curvature and Tensors (Part 2)"

THURSDAY, 21st

9:40-11:00AM, SURGE 268 — **GROUPOIDS SEMINAR** (Julie Bergner, UCR)
"Classic Fixed Point Theory"

11:10-12:30PM, SURGE 268 — **FRACTAL RESEARCH GROUP** (Hafedh Herichi, UCR)
"On Some Properties of the Spectral Operator"

11:10-12:30PM, SURGE 277 — **COHOMOLOGY OF ALGEBRAIC VARIETIES** (Ziv Ran)

1:10-2:00PM, SURGE 277 — **OPERATOR ALGEBRAS & RELATED TOPICS** (Ricky Han)
"A Planar Algebra Construction of the Haagerup Subfactor (cont.)"

12:40-2:00PM, SURGE 284 — **LIE THEORY** (Vyjayanthi Chari)

2:10-3:00PM, SURGE 268 — **TOPOLOGY** (Stefano Vidussi)

3:40-5:00PM, SURGE 277 — **ALGEBRAIC GEOMETRY** (Ziv Ran, UCR)
"Subscheme Methods for Nodal Curves: An Overview"

3:40-5:00PM, SURGE 268 — **MATHEMATICAL PHYSICS** (Michael Maroun, UCR)
"Computation of the Divergent Integrals Arising in the Feynman Functional Integral for the Shrodinger Dynamics"

FRIDAY, 22nd

11:10-12:00PM, SURGE 284 — **DIFFERENTIAL GEOMETRY** (Dr. L-S Tseng, Harvard)
"Sympletic Hodge Theory"

12:10-1:00PM, SURGE 268 — **COBORDISM & TOPOLOGICAL FIELD THEORIES** (John Huerta, UCR)
"A Crash Course in Simplicial Methods"

3:10-4:00PM, SURGE 268 — **COMMUTATIVE ALGEBRA** (David Rush)

UNIVERSITY OF CALIFORNIA RIVERSIDE

DEPARTMENT OF MATHEMATICS

Differential Geometry

Dr. L-S Tseng

(Harvard University)

"Sympletic Hodge Theory"

Abstract: Although Hodge theory is an important tool in Riemannian and complex geometry, its usefulness in sympletic geometry has been rather limited. In this talk, we reframe the notion of Hodge theory on sympletic manifolds and show how it can be powerfully applied to certain novel differential operators that are not necessarily elliptic. In so doing, we discover a number of new finite-dimensional cohomolgies that encode sympletic invariants.

Friday, January 22nd, 2010
Surge 284
11:10-12:00pm

UNIVERSITY OF CALIFORNIA, RIVERSIDE
Department of Mathematics

Calendar of Events
For the Week January 25th – 29th, 2010

TUESDAY, 26th

11:10-12:30PM, SURGE 268	**COHOMOLOGY OF ALGEBRAIC VARIETIES** (Ziv Ran)
12:40-2:00PM, SURGE 284	**LIE THEORY** (Irfan Bagci, UCR) "On Cohomology and Support Varieties for Lie Superalgebras"
2:10-3:00PM, SURGE 268	**TOPOLOGY** (Stefano Vidussi)
3:40-5:00PM, SURGE 268	**FUNCTIONAL ANALYSIS** (Victor Shapiro, UCR) "Hermite Polynomials and Non-Linear PDE"
3:40-5:00PM, SURGE 277	**ALGEBRAIC GEOMETRY** (Ziv Ran)

WEDNESDAY, 27th

10:10-11:00AM, SURGE 268	**COMBINATORIAL NUMBER THEORY** (Mei-Chu Chang)
1:10-2:00PM, SURGE 284	**TOPICS IN PARTIAL DIFFERENTIAL EQUATIONS** (Qi Zhang, UCR) "The Structures of Solutions of Axis Symmetric Navier-Stokes Equations Near Maximal Points"

THURSDAY, 28th

9:40-11:00AM, SURGE 268	**GROUPOIDS SEMINAR** (Julie Bergner, UCR) "Ringoids in Fixed Point Theory"
11:10-12:30PM, SURGE 268	**FRACTAL RESEARCH GROUP** (Nishu Lal, UCR) "Complex Dynamics in Higher Dimensions: Part I"
11:10-12:30PM, SURGE 277	**COHOMOLOGY OF ALGEBRAIC VARIETIES** (Ziv Ran)
1:10-2:00PM, SURGE 277	**OPERATOR ALGEBRAS & RELATED TOPICS** (Ricky Han) "A Planar Algebra Construction of the Haagerup Subfactor (cont.)"
12:40-2:00PM, SURGE 284	**LIE THEORY** (Matt Bennett, UCR) "The Catalan Numbers and Representation Theory of Current Algebras"
2:10-3:00PM, SURGE 268	**TOPOLOGY** (Stefano Vidussi)
3:40-5:00PM, SURGE 277	**ALGEBRAIC GEOMETRY** (Ziv Ran)
3:40-5:00PM, SURGE 268	**MATHEMATICAL PHYSICS** (Dr. Aviv Censor, UCR) "Topological Degroupoidification"

FRIDAY, 29th

11:10-12:00PM, SURGE 284	**DIFFERENTIAL GEOMETRY** (Charles Boyer, Univ. New Mexico) "Maximal Tori in Contactomorphism Groups and Extremal Metrics"
12:10-1:00PM, SURGE 268	**COBORDISM & TOPOLOGICAL FIELD THEORIES** (Julie Bergner, UCR) "More Simplicial Methods and the Nerve Construction"
3:10-4:00PM, SURGE 268	**COMMUTATIVE ALGEBRA** (David Rush)

UNIVERSITY OF CALIFORNIA RIVERSIDE

DEPARTMENT OF MATHEMATICS

Differential Geometry

Charles Boyer

(University of New Mexico)

"Maximal Tori in Contactomorphism Groups and Extremal Metrics"

Abstract: I describe a general scheme for relating transverse, almost complex, structures on a contact manifold to conjugacy classes of maximal tori in the contactotmorphism group. To a maximum torus of Reeb type there is an associate cone of Reeb vector fields, the Sasaki cone. I then consider the problem of the existence of extremal Sasakian or K-contact metrics related to a given conjugacy class of maximal tori. Examples are given and the moduli problem is discussed.

Friday, January 29nd, 2010
Surge 284
11:10-12:00pm

UNIVERSITY OF CALIFORNIA, RIVERSIDE
Department of Mathematics

Calendar of Events
For the Week February 1st – 5th, 2010

TUESDAY, 2nd

11:10-12:30PM, SURGE 268 — **COHOMOLOGY OF ALGEBRAIC VARIETIES** (Ziv Ran)

12:40-2:00PM, SURGE 284 — **LIE THEORY** (Konstantina Christodoulopoulou, UCR)
"On Blocks and Modules for Whittaker Pairs (following P. Batra & V. Mazorchuk)"

2:10-3:00PM, SURGE 268 — **TOPOLOGY** (Stefano Vidussi)

3:40-5:00PM, SURGE 268 — **FUNCTIONAL ANALYSIS** (Victor Shapiro, UCR)
"Hermite Polynomials and Quasilinear PDE"

3:40-5:00PM, SURGE 277 — **ALGEBRAIC GEOMETRY** (Ziv Ran)

WEDNESDAY, 3rd

10:10-11:00AM, SURGE 268 — **COMBINATORIAL NUMBER THEORY** (John Dusel)
"Expansion of Orbits of Some Dynamical Systems over Finite Fields"

1:10-2:00PM, SURGE 284 — **TOPICS IN PARTIAL DIFFERENTIAL EQUATIONS** (Qi Zhang, UCR)
"Reading on Ricci Flow"

THURSDAY, 4th

9:40-11:00AM, SURGE 268 — **GROUPOIDS SEMINAR** (Chris Carlson, UCR)
"From Manifolds to Orbifolds: A Topological Excursion"

11:10-12:30PM, SURGE 268 — **FRACTAL RESEARCH GROUP** (Rob Niemeyer, UCR)
"Periodic Orbits of the Koch Snowflake Billiard"

11:10-12:30PM, SURGE 277 — **COHOMOLOGY OF ALGEBRAIC VARIETIES** (Ziv Ran)

1:10-2:00PM, SURGE 277 — **OPERATOR ALGEBRAS & RELATED TOPICS** (Ricky Han)
"A Planar Algebra Construction of the Haagerup Subfactor (cont.)"

12:40-2:00PM, SURGE 284 — **LIE THEORY** (Eliana Zoque Lopez, UCR)
"Principal Nilpotent Pairs in a Semi-simple Lie Algebra (following Ginzburg)"

2:10-3:00PM, SURGE 268 — **TOPOLOGY** (Stefano Vidussi)

3:40-5:00PM, SURGE 277 — **ALGEBRAIC GEOMETRY** (Ziv Ran)

3:40-5:00PM, SURGE 268 — **MATHEMATICAL PHYSICS** (Eugene Gutkin)
"Security and Flatness for Riemannian Manifolds, Especially for Surfaces"
(joint with colloquium)

FRIDAY, 5th

11:10-12:00PM, SURGE 284 — **DIFFERENTIAL GEOMETRY** (Jorge Lauret, Universidad Nacional de Cordoba)
"Homogeneous Ricci Flows and Solitons and the Alekseevskii Conjecture"

12:10-1:00PM, SURGE 268 — **COBORDISM & TOPOLOGICAL FIELD THEORIES** (Julie Bergner, UCR)
"Complete Segal Spaces"

3:10-4:00PM, SURGE 268 — **COMMUTATIVE ALGEBRA** (David Rush)

UNIVERSITY OF CALIFORNIA RIVERSIDE

DEPARTMENT OF MATHEMATICS

COLLOQUIUM

Professor Eugene Gutkin

(Copernicus University, Torun, Poland / Math Institute Polish Academy of Sciences)

"Security and Flatness for Riemannian Manifolds, Especially Surfaces"

Abstract: A pair of points in a Riemannian manifold is secure if the geodesics between the points can be blocked by a finite number of point obstacles; otherwise the pair is insecure. A manifold is secure if all pairs of its points are secure. A manifold is insecure if an insecure point pair exists.

Compact, flat manifolds are secure. A standing conjecture says that these are the only secure, compact Riemannian manifolds. In a joint work with Victor Bangert, we proved this for surfaces of genus greater than zero. I will report on this and related works.

(Note: This is a joint with Math Physics Seminar.)

Thursday, February 4th, 2010

Surge 284

4:10-5:00pm

Tea Time at 3:40pm

UNIVERSITY OF CALIFORNIA RIVERSIDE

DEPARTMENT OF MATHEMATICS

Differential Geometry

Jorge Lauret

(Universidad Nacional de Cordoba)

"Homogeneous Ricci Flows and Solitons and the Alekseevski Conjecture"

Abstract: We shall describe and ODE for a curve in the variety of Lie algebras which is equivalent in a natural and specific sense to the Ricci flow starting at any homogeneous Riemannian manifold. Such a flow is however much for friendly in some particular cases (as, for instance, nilmanifolds).

Concerning Ricci solitons, we will define algebraic solitons on homogeneous spaces by generalizing the concept of nilsoliton and give an idea of the proff of the following : any example of an algebraic soliton which is not a solvmanifold would give rise to a counterexample to the long standing Alekseevskii conjecture: Any connected Einstein homogeneous Riemannian manifold of negative scalar curvature is diffeomorphic to a euclidean space.

We use tools from geometric invariant theory to study the natural GL(n)-action on the variety of n-dimensional Lie algebras. The interplay works thanks to a strong relationship discovered between the moment map for the action and the Ricci curvature of the homogeneous manifold. Properties of the critical points of the square norm of the moment map and stratification defined by Kirwan are strongly used in the proof of the results we have obtained so far.

Friday, February 5th, 2010

Surge 284

11:10-12:00pm

UNIVERSITY OF CALIFORNIA, RIVERSIDE
Department of Mathematics

Calendar of Events
For the Week February 8th - 12th, 2010

TUESDAY, 9th

11:10-12:30PM, SURGE 268	**COHOMOLOGY OF ALGEBRAIC VARIETIES** (Ziv Ran)
12:40-2:00PM, SURGE 284	**LIE THEORY** (Vyjayanthi Chari)
2:10-3:00PM, SURGE 268	**TOPOLOGY** (Stefano Vidussi)
3:40-5:00PM, SURGE 268	**FUNCTIONAL ANALYSIS** (M.M. Rao, UCR) "Evolution of Stationary Dilations"
3:40-5:00PM, SURGE 277	**ALGEBRAIC GEOMETRY** (Ziv Ran)

WEDNESDAY, 10th

10:10-11:00AM, SURGE 268	**COMBINATORIAL NUMBER THEORY** (Mei-Chu Chang)
1:10-2:00PM, SURGE 284	**TOPICS IN PARTIAL DIFFERENTIAL EQUATIONS** (Edward Burkard, UCR) "Curvature and Tensors (Part 3)"

THURSDAY, 11th

9:40-11:00AM, SURGE 268	**GROUPOIDS SEMINAR** (Daniele Grandini, UCR) "Geometry Groupoids, Part 1: Manifolds"
11:10-12:30PM, SURGE 268	**FRACTAL RESEARCH GROUP** (Jason Payne, UCR) "The Theorem of Hadamard De La Vallee Poussin"
11:10-12:30PM, SURGE 277	**COHOMOLOGY OF ALGEBRAIC VARIETIES** (Ziv Ran)
1:10-2:00PM, SURGE 277	**OPERATOR ALGEBRAS & RELATED TOPICS** (Feng Xu) TBA
12:40-2:00PM, SURGE 284	**LIE THEORY** (Vyjayanthi Chari)
2:10-3:00PM, SURGE 268	**TOPOLOGY** (Stefano Vidussi)
3:40-5:00PM, SURGE 277	**ALGEBRAIC GEOMETRY** (Ziv Ran, UCR) "Nodal Curves Whose Canonical System is Not Very Ample"
3:40-5:00PM, SURGE 268	**MATHEMATICAL PHYSICS** (Prof. Gerald Johnson) "Feynman's Operational Calculi: The Extraction of Linear Factors and Applications"

FRIDAY, 12th

11:10-12:00PM, SURGE 284	**DIFFERENTIAL GEOMETRY** (No Meeting) ***CANCELED***
12:10-1:00PM, SURGE 268	**COBORDISM & TOPOLOGICAL FIELD THEORIES** (Julie Bergner, UCR) "n-Fold Complete Segal Spaces"
3:10-4:00PM, SURGE 268	**COMMUTATIVE ALGEBRA** (David Rush)

UNIVERSITY OF CALIFORNIA RIVERSIDE

DEPARTMENT OF MATHEMATICS

COLLOQUIUM

Susan Friedlander

(University of Southern California)

"Instabilities in Fluid Motion"

Abstract:

Instabilities in fluid motion are ubiquitous and yet instabilities come in various “flavors”. The partial differential equations of fluid dynamics are very challenging nonlinear systems. A classical approach to detecting instabilities is to study the spectral problem associated with the linearized equations. We will discuss how in some situations it is possible to prove that linear instability implies instability for the full nonlinear equations. Examples where this can be proved include the cases of the 2-dimensional Euler equations, the 3-dimensional Navier-Stokes equation and an interesting equations arising in oceanography called the surface quasi-geostrophic equation.

Thursday, February 10th, 2010

Surge 284

4:10-5:00pm

Tea Time at 3:40pm

UNIVERSITY OF CALIFORNIA RIVERSIDE

DEPARTMENT OF MATHEMATICS

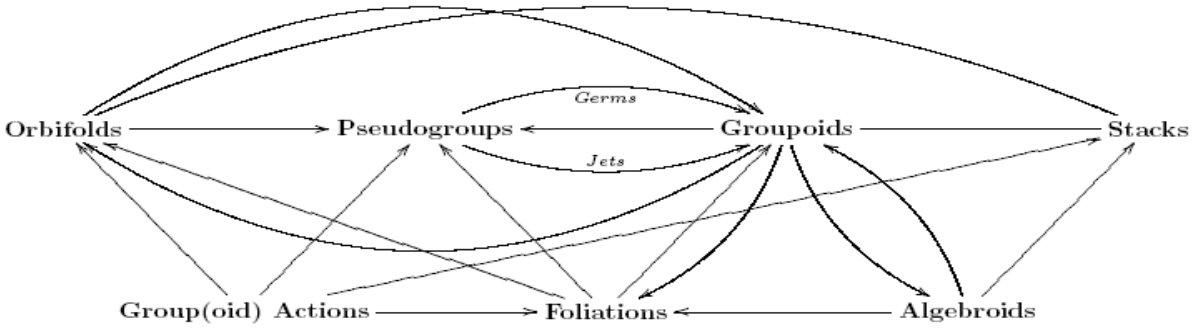
Groupoids Seminar

Daniele Grandini

(UCR)

"Geometry Groupoids, Part 1: Orbifolds"

Abstract: The purpose of this series of talks will be understanding several geometric objects naturally related to groupoids, such as orbifolds, actions, foliations, algebroids, pseudogroups and differentiable stacks. These objects are linked to each other in various ways. If time permits, I will explain all their mutual relations, shown in the following chart:



Part 1: Orbifolds

I will introduce orbifolds as a generalization of manifolds and show how they arise in the context of proper group actions. I will also explain why orbifolds can be thought of equivalence classes of proper Lie groupoids.

Thursday, February 11th, 2010

Surge 268

9:40-11:00am

UNIVERSITY OF CALIFORNIA, RIVERSIDE
Department of Mathematics

Calendar of Events
For the Week February 15th – 19th, 2010

TUESDAY, 16th

11:10-12:30PM, SURGE268	**COHOMOLOGY OF ALGEBRAIC VARIETIES** (Ziv Ran)
12:40-2:00PM, SURGE 284	**LIE THEORY** (Wee Liang Gan, UCR) "Whittaker Vectors and Associate Varieties"
2:10-3:00PM, SURGE 268	**TOPOLOGY** (Stefano Vidussi)
3:40-5:00PM, SURGE 268	**FUNCTIONAL ANALYSIS** (M. M. Rao, UCR) "Evolution of Stationary Dilations, Part 2"
3:40-5:00PM, SURGE 277	**ALGEBRAIC GEOMETRY** (Ziv Ran)

WEDNESDAY, 17th

10:10-11:00AM, SURGE 268	**COMBINATORIAL NUMBER THEORY** (Mei-Chu Chang, UCR) "Character Sums"
1:10-2:00PM, SURGE 284	**TOPICS IN PARTIAL DIFFERENTIAL EQUATIONS** (Qi Zhang)

THURSDAY, 18th

9:40-11:00AM, SURGE 268	**GROUPOIDS SEMINAR** (Daniele Grandini, UCR) "Geometry and Groupoids, Part 2: from Group(oid)s to Orbifolds"
11:10-12:30PM, SURGE 268	**FRACTRAL RESEARCH GROUP** (Michael Maroun, UCR) "Introduction to Spontaneous Symmetry Breaking"
11:10-12:30PM, SURGE 277	**COHOMOLOGY OF ALGEBRAIC VARIETIES** (Ziv Ran)
12:40-2:00PM, SURGE 284	**LIE THEORY** (Vyjayanthi Chari)
1:10-2:00PM, SURGE 277	**OPERATOR ALGEBRAS & RELATED TOPICS** (Maria Grazia Viola, Lakehead Univ.) "Unique Lift of an Action of the Temperley-Lieb Algebra to a Faithful Action of the Fuss-Catalan Algebra"
2:10-3:00PM, SURGE 268	**TOPOLOGY** (Stefano Vidussi)
3:40-5:00PM, SURGE 277	**ALGEBRAIC GEOMETRY** (Ziv Ran)
3:40-5:00PM, SURGE 268	**MATHEMATICAL PHYSICS** (Rob Niemeyer, UCR) "Veech Groups and Flat Surfaces"

FRIDAY, 19th

11:10-12:00PM, SURGE 284	**DIFFERENTIAL GEOMETRY** (Steven Bradlow, UCSD) "Sp (4,R) – Higgs Bundles: A Higgs Bundle Case Study"
12:10-1:00PM, SURGE 268	**COBORDISM & TOPOLOGICAL FIELD THEORIES** (Julie Bergner, UCR) "Complete Segal Spaces of Cobordisms"
3:10-4:00PM, SURGE 268	**COMMUTATIVE ALGEBRA** (David Rush)

UNIVERSITY OF CALIFORNIA RIVERSIDE

DEPARTMENT OF MATHEMATICS

Operator Algebras & Related Topics

Maria Grazia Viola

(Lakehead University, Ontario, Canada)

"Unique Lift of Action of the Temperley-Lieb Algebra to a Faithful Action of the Fuss-Catalan Algebra"

Abstract: In his thesis F. Hivert introduced a faithful action of the symmetric group S_n on the ring of polynomials $C[x_1,x_2...,x_n]$, which does not preserves the multiplication, but still leads to interesting results. The invariants of the action are the quasi-symmetric functions. Unfortunately, when we extend this action to the group algebra $C[S_n]$, the action we obtain is not faithful anymore. However, by taking the quotient of $C[S_n]$ by the kernel of this new action we obtain a faithful action of the Temperley-Lieb $TL_n(2)$ on the ring of polynomials in n variables. Since the Temperley-Lieb algebra can be embedded in the Fuss-Catalan algebra on two colours $FC_n(a,b)$ with $ab = 2$, a natural question to ask is if the action of the Temperley-Lieb algebra can be extended to a faithful action of the Fuss-Catalan algebra, and if the extension is unique. We will show how we use the theory of subfactors to answer both these questions in the affirmative. This is joint work with R. Burnstein.

Thursday, February 18th, 2010

Surge 277

1:10-2:00pm

UNIVERSITY OF CALIFORNIA RIVERSIDE

DEPARTMENT OF MATHEMATICS

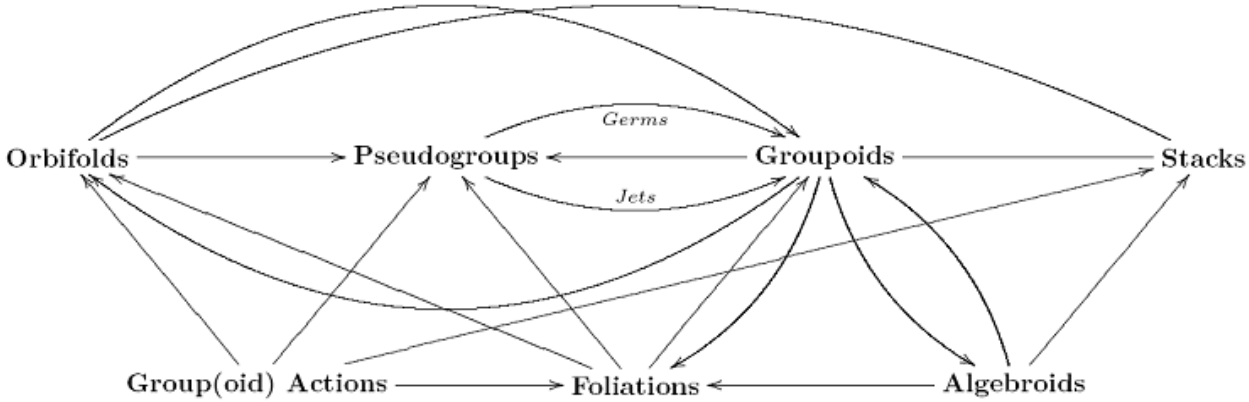
Groupoids Seminar

Daniele Grandini

(UCR)

"Geometry and Groupoids, Part 2, from Group(oid)s to Orbifolds"

Abstract: The purpose of this series of talks will be understanding several geometric objects naturally related to groupoids, such as orbifolds, actions, foliations, algebroids, pseudogroups and differentiable stacks. These objects are linked to each other in various ways. If time permits, I will explain all their mutual relations, shown in the following chart:



Part 2: from Group(oid)s to Orbifolds

I will show with several examples how orbifolds arise in the context of proper group actions and that the orbit space of an etale, proper Lie groupoid admits a natural orbifold structure.

Thursday, February 18th, 2010

Surge 268

9:40-11:00am

UNIVERSITY OF CALIFORNIA RIVERSIDE

DEPARTMENT OF MATHEMATICS

Differential Geometry

Steven Bradlow

(University of Illinois Urbana Campaign/UC San Diego)

"Sp (4,R) – Higgs Bundles: a Higgs Bundle Case Study"

Abstract: Using G = Sp (4,R) as a special case, we will describe what G-Higgs bundles are and how they can be used to study representation varieties for representations of surface groups into non-compact real Lie groups. In particular we will use Higgs bundles to count the number of components of representation varieties and to investigate in which components the representations do or do not factor through reductive subgroups of G.

Friday, February 19th, 2010
Surge 284
11:10-12:00pm

UNIVERSITY OF CALIFORNIA, RIVERSIDE
Department of Mathematics

Calendar of Events
For the Week February 22nd – 26th, 2010

TUESDAY, 23rd

11:10-12:30PM, SURGE268 — **COHOMOLOGY OF ALGEBRAIC VARIETIES** (Ziv Ran)

12:40-2:00PM, SURGE 284 — **LIE THEORY** (Vyjayanthi Chari)

2:10-3:00PM, SURGE 268 — **TOPOLOGY** (Stefano Vidussi)

3:40-5:00PM, SURGE 268 — **FUNCTIONAL ANALYSIS** (M. M. Rao, UCR)
"De Bruijin's Approach to Distributions & Fourier Analysis"

3:40-5:00PM, SURGE 277 — **ALGEBRAIC GEOMETRY** (Ziv Ran)

WEDNESDAY, 24th

10:10-11:00AM, SURGE 268 — **COMBINATORIAL NUMBER THEORY** (Mei-Chu Chang)

1:10-2:00PM, SURGE 284 — **TOPICS IN PARTIAL DIFFERENTIAL EQUATIONS** (Qi Zhang)

THURSDAY, 25th

9:40-11:00AM, SURGE 268 — **GROUPOIDS SEMINAR** (Daniele Grandini, UCR)
"Geometry and Groupoids, Part 2: From Group(oid)s to Orbifolds (cont.)"

11:10-12:30PM, SURGE 268 — **FRACTRAL RESEARCH GROUP** (Scot Childress, UCR)
"Some Kind of Physics Thing"

11:10-12:30PM, SURGE 277 — **COHOMOLOGY OF ALGEBRAIC VARIETIES** (Ziv Ran)

12:40-2:00PM, SURGE 284 — **LIE THEORY** (Irfan Bagci, UCR)
"An Intro to Cohomology and Representation Theory of Modular Lie (super) Algebras"

1:10-2:00PM, SURGE 277 — **OPERATOR ALGEBRAS & RELATED TOPICS** (Feng Xu)
TBA

2:10-3:00PM, SURGE 268 — **TOPOLOGY** (Stefano Vidussi)

3:40-5:00PM, SURGE 277 — **ALGEBRAIC GEOMETRY** (Ziv Ran)

3:40-5:00PM, SURGE 268 — **MATHEMATICAL PHYSICS** (Daniel Sternheimer, Keio Univ.)
"Deformation, Quantizations, and the Geometry of Space-Time: An Introductory Overview" (joint with colloquium)

FRIDAY, 26th

11:10-12:00PM, SURGE 284 — **DIFFERENTIAL GEOMETRY** (Vestislav Apostolov, Université du Québec à Montréal)
"Extremal Kähler Metrics on Projective Bundles"

12:10-1:00PM, SURGE 268 — **COBORDISM & TOPOLOGICAL FIELD THEORIES** (Julie Bergner, UCR)
"n-Fold Complete Segal Spaces of Cobordisms and Notions of Duals"

3:10-4:00PM, SURGE 268 — **COMMUTATIVE ALGEBRA** (David Rush)

UNIVERSITY OF CALIFORNIA RIVERSIDE

DEPARTMENT OF MATHEMATICS

COLLOQUIUM

Daniel Sternheimer

(Keio University/Intitut de Mathématiques de Bourgogne)

"Deformations, Quantizations, and the Geometry of Space-Time: An Introductory Overview"

Abstract:

We present, from an epistemological point of view, the evolution of physical concepts in the context of the relation between mathematics and physics. We stress the importance of symmetries and of space-time in fundamental physical theories and show that the above evolution is best understood in the framework of the mathematical notion of deformation. Important paradigms include the concepts of relativity and quantization, exemplified by deformation quantization and its manifold avatars going from analytic and algebraic geometry to quantum groups and the "dual" aspect of quantum spaces. Deforming and quantizing Minkowski space-time and its symmetry to anti de Sitter has significant physical consequences that we sketch.

Thursday, February 25th, 2010

Surge 284

4:10-5:00pm

Tea Time at 3:40pm

UNIVERSITY OF CALIFORNIA RIVERSIDE

DEPARTMENT OF MATHEMATICS

Differential Geometry

Vestislav Apostolov

(Université du Québec à Montréal, Canada)

"Extremal Kähler Metrics on Projective Bundles"

Abstract: I will discuss the existence problem of extremal Kähler metrics (in the sense of Calabi) on the total space of a holomorphic projective bundle P(E) over a compact complex curve. The problem is not solved in full generality even in the case of a projective plane bundle over CP1. However, I will show that sufficiently "small" Kähler classes admit extremal Kähler metrics if and only if the underlying vector bundle E can be decomposed as a sum of stable factors. The talk will be based on a recent work with D. Calderbak, P. Gauduchon and C. Tonnesen-Friedman.

Friday, February 26th, 2010
Surge 284
11:10-12:00pm

UNIVERSITY OF CALIFORNIA, RIVERSIDE
Department of Mathematics

Calendar of Events
For the Week March 1st – 5th, 2010

TUESDAY, 2nd

11:10-12:30PM, SURGE268 — **COHOMOLOGY OF ALGEBRAIC VARIETIES** (Ziv Ran)

12:40-2:00PM, SURGE 284 — **LIE THEORY** (Ghislain Fourier, Universität zu Köln, Germany)
"Another Basis for sl_n-modules and its Applications"

2:10-3:00PM, SURGE 268 — **TOPOLOGY** (Stefano Vidussi)

3:40-5:00PM, SURGE 268 — **FUNCTIONAL ANALYSIS** (Lucas Randall, UCR)
"De Bruijin's Approach to Distributions & Fourier Analysis: Part 2"

3:40-5:00PM, SURGE 277 — **ALGEBRAIC GEOMETRY** (Ziv Ran)

WEDNESDAY, 3rd

10:10-11:00AM, SURGE 268 — **COMBINATORIAL NUMBER THEORY** (Mei-Chu Chang)

1:10-2:00PM, SURGE 284 — **TOPICS IN PARTIAL DIFFERENTIAL EQUATIONS** (Qi Zhang)

THURSDAY, 4th

9:40-11:00AM, SURGE 268 — **GROUPOIDS SEMINAR** (Daniele Grandini, UCR)
"Geometry and Groupoids, Part 3: Pseudogroups"

11:10-12:30PM, SURGE 268 — **FRACTRAL RESEARCH GROUP** (Dr. Dana Clahane, Fullerton College)
"Fractal Membranes"

11:10-12:30PM, SURGE 277 — **COHOMOLOGY OF ALGEBRAIC VARIETIES** (Ziv Ran)

12:40-2:00PM, SURGE 284 — **LIE THEORY** (Tim Ridenour, UCR)
TBA

1:10-2:00PM, SURGE 277 — **OPERATOR ALGEBRAS & RELATED TOPICS** (Feng Xu)
TBA

2:10-3:00PM, SURGE 268 — **TOPOLOGY** (Stefano Vidussi)

3:40-5:00PM, SURGE 277 — **ALGEBRAIC GEOMETRY** (Ziv Ran)

3:40-5:00PM, SURGE 268 — **MATHEMATICAL PHYSICS** (Nishu Lal, UCR)
"Complex Dynamics in Higher Dimensions: Part II"

FRIDAY, 5th

11:10-12:00PM, SURGE 284 — **DIFFERENTIAL GEOMETRY** (Dr. Mehmet F. Arikan, Rochester University)
"An Upper Bound for the 'Support Genus Invariant' of Contact Structures"

12:10-1:00PM, SURGE 268 — **COBORDISM & TOPOLOGICAL FIELD THEORIES** (Julie Bergner, UCR)
"Fully Dualizable Objects and the Precise Statement of the Cobordism Hypothesis"

3:10-4:00PM, SURGE 268 — **COMMUTATIVE ALGEBRA** (David Rush)

UNIVERSITY OF CALIFORNIA RIVERSIDE

DEPARTMENT OF MATHEMATICS

Differential Geometry

Dr. Mehment F. Arikan

(Rochester University)

"An Upper Bound for the 'Support Genus Invariant' of Contact Structures"

Abstract: The algorithm given by Akbulut and Ozbagci constructs an explicit open book decomposition on a closed contact three-manifold described by a contact surgery on a link in the three-sphere. In this talk, we'll improve this algorithm by using Giroux's contact cell decomposition process. Our algorithm gives a better upper bound for the recently defined "support genus invariant" of contact structures.

Friday, March 5th, 2010
Surge 284
11:10-12:00pm

UNIVERSITY OF CALIFORNIA, RIVERSIDE
Department of Mathematics

Calendar of Events
For the Week March 8th – 12th, 2010

TUESDAY, 9th

11:10-12:30PM, SURGE 268 — **COHOMOLOGY OF ALGEBRAIC VARIETIES** (Ziv Ran)

1:00-2:00PM, SURGE 284 — **LIE THEORY** (Matt Bennett, UCR)
TBA

2:10-3:00PM, SURGE 268 — **TOPOLOGY** (Stefano Vidussi)

3:40-4:30PM, SURGE 268 — **FUNCTIONAL ANALYSIS** (James Stafney, UCR)
"Celestial Mechanics and Measure Preserving Transformations"

3:40-5:00PM, SURGE 277 — **ALGEBRAIC GEOMETRY** (Ziv Ran)

WEDNESDAY, 10th

10:10-11:00AM, SURGE 268 — **COMBINATORIAL NUMBER THEORY** (Mei-Chu Chang)

11:10-12:00PM, SURGE 277 — **TOPICS IN PARTIAL DIFFERENTIAL EQUATIONS** (Benjamin Dodson, UCR)
"Frequency Localized Morawetz Estimates for the Defocusing Nonlinear Schrödinger Equation"

THURSDAY, 11th

9:40-11:00AM, SURGE 268 — **GROUPOIDS SEMINAR** (Christopher Walker)
TBA

11:10-12:30PM, SURGE 268 — **FRACTRAL RESEARCH GROUP** (Hafedh Herichi, UCR)
"On the Appolonian Integral Packing"

11:10-12:30PM, SURGE 277 — **COHOMOLOGY OF ALGEBRAIC VARIETIES** (Ziv Ran)

1:00-2:00PM, SURGE 284 — **LIE THEORY** (Emanuel Stoica, MIT)
"Unitary Representations of Rational Cherednik Algebras and Hecke Algebras"

1:10-2:00PM, SURGE 277 — **OPERATOR ALGEBRAS & RELATED TOPICS** (Marta Asaeda)

2:10-3:00PM, SURGE 268 — **TOPOLOGY** (Stefano Vidussi)

3:40-5:00PM, SURGE 277 — **ALGEBRAIC GEOMETRY** (Ziv Ran)

3:40-5:00PM, SURGE 268 — **MATHEMATICAL PHYSICS** (Dr. Scot Childress, UCR)
"On the Subject of Mathematical Physics"

FRIDAY, 12th

11:10-12:00PM, SURGE 284 — **DIFFERENTIAL GEOMETRY** (Prof. Rafael Herrera Guzman, C.I.M.A.T.)
"Complex Contact Manifolds and Circle Actions"

12:10-1:00PM, SURGE 268 — **COBORDISM & TOPOLOGICAL FIELD THEORIES** (Vasiliy Dolgushev, UCR)
"The Cobordism Hypothesis for Manifolds with Structure"

3:10-4:00PM, SURGE 268 — **COMMUTATIVE ALGEBRA** (David Rush)

UNIVERSITY OF CALIFORNIA RIVERSIDE

DEPARTMENT OF MATHEMATICS

Topics in Partial Differential Equations

Benjamin Dodson
(UCR)

"Frequency Localized Morawetz Estimates for the Defocusing Nonlinear Schrödinger Equations"

Abstract:

In this talk, we will continue our study of the L^2 critical nonlinear Schrodinger equation

$$iu_t + \Delta u = |u|^{4/d}u, u(0) \quad = u_0 \tag{0.1}$$

when $d \geq 3$. We will use the estimates obtained in the last talk to prove frequency localized Morawetz estimates that will defeat the minimal mass blowup scenario $N(t) \equiv 1$. We will also discuss extending this to dimensions $d = 1$ and $d = 2$.

Wednesday, March 10th, 2010
Surge 277
11:10-12:00pm

UNIVERSITY OF CALIFORNIA RIVERSIDE

DEPARTMENT OF MATHEMATICS

Lie Theory

Emanuel Stoica

(MIT)

"Unitary Representations of Rational Cherednik Algebras and Hecke Algebras"

Abstract: In this talk I will explain the classification of unitary irreducible representations in the highest weight category of the rational Cherednik algebra of the symmetric group and how unitarity is preserved by the KZ functor, that maps highest weight modules to modules over the corresponding Hecke algebra.

Thursday, March 11th, 2010
Surge 284
1:00-2:00pm

UNIVERSITY OF CALIFORNIA RIVERSIDE

DEPARTMENT OF MATHEMATICS

Differential Geometry

Prof. Rafael Herrera Guzman

(C.I.M.A.T., Guanajuato, Mexico)

"Complex Contact Manifolds and Circle Actions"

Abstract: We study equivariant holomorphic Euler characteristics on complex contact manifolds admitting compatible circle actions. We prove a rigidity theorem and deduce the vanishing of several of them, which are analogous to those proved by LeBrun and Salamon on Fano contact manifolds.

Friday, March 12th, 2010
Surge 284
11:10-12:00pm