



UNIVERSITY OF CALIFORNIA, RIVERSIDE

Department of Mathematics

Calendar of Events For the Week of January 13th – 17th, 2014

MONDAY, 13th

3:10-4:00PM, SURGE 268

TOPOLOGY | Dr. Reinhard Schultz

“A topological characterization of the real line”

4:10-5:00PM, SURGE 284

GRAD SEMINAR |

TUESDAY, 14th

1:00-2:00PM, SURGE 284

LIE THEORY | Lisa Schneider, UC Riverside

Oral Exam

1:10-2:00PM, SURGE 268

OPERATOR ALGEBRAS | Andrew Monnot, UC Riverside

“Spectral Triples and Noncommutative Tori”

1:10-2:00PM, **SURGE 277***

ALGEBRAIC GEOMETRY | Hwayoung Lee, KIAS, Seoul

“Mirror Symmetry”

4:10-5:00PM, SURGE 284

MATH CLUB | Nick Lanni, UCR

“SpaceJourney: Where Math meets Game Development!”

WEDNESDAY, 15th

11:10-12:00PM, SURGE 268

COMBINATORIAL NUMBER THEORY | Dr. Costello/Dr. Chang

11:10-12:00PM, SURGE 268

PDE & APPLIED MATHEMATICS | Dr. Zhi Zhou, A&M University

“Finite element methods for fractional-order partial differential equations”

12:10-1:00PM, SURGE 268

FLUIDS SEMINAR | Dr. Jim Kelliher

1:10-2:00PM, SURGE 284

GRTS | John Dusel

3:40-5:00PM, SURGE 284

COLLOQUIUM |

No Colloquium This Week

THURSDAY, 16th

11:10-12:30PM, SURGE 268

FRACTAL RESEARCH GROUP | Dr. Michel Lapidus

1:00-2:00PM, SURGE 284

LIE THEORY | Mathieu Mansuy, Université Paris VII, France

“Extremal loop weight representations of quantum toroidal algebras”

3:40-5:00PM, SURGE 268

MATHEMATICAL PHYSICS & DYNAMICAL SYSTEMS | Dr. Michel Lapidus

FRIDAY, 17th

11:10-12:00PM, SURGE 268

DIFFERENTIAL GEOMETRY | Dr. Zhang-Dan Guan, UC Riverside

“Smooth geodesic convex property on type II cohomogeneity one compact $K\backslash\text{ahler}$ manifolds”

3:10-4:00PM, SURGE 268

COMMUTATIVE ALGEBRA | Dr. David Rush



UNIVERSITY OF CALIFORNIA, RIVERSIDE

Department of Mathematics

Calendar of Events For the Week of January 20th – 24th, 2014

MONDAY, 20th

3:10-4:00PM, SURGE 268

TOPOLOGY | Dr. Reinhard Schultz
Holiday

4:10-5:00PM, SURGE 284

GRAD SEMINAR |
Holiday

TUESDAY, 21st

1:00-2:00PM, SURGE 284

LIE THEORY | Dr. Mathieu Mansuy, Université Paris VII, France
“Extremal loop weight representations of quantum toroidal algebras (cont.)”

1:10-2:00PM, SURGE 268

OPERATOR ALGEBRAS | Dr. Feng Xu

1:10-2:00PM, SURGE 277*

ALGEBRAIC GEOMETRY | Dr. Ziv Ran

4:10-5:00PM, SURGE 284

MATH CLUB | Kenny Flagg, UC Riverside
“Eigenfaces: Dimensionality Reduction for Face Recognition”

WEDNESDAY, 22nd

11:10-12:00PM, SURGE 268

COMBINATORIAL NUMBER THEORY | Dr. Costello/Dr. Chang

11:10-12:00PM, SURGE 268

PDE & APPLIED MATHEMATICS | Dr. Juhi Jang

12:10-1:00PM, SURGE 268

FLUIDS SEMINAR | Dr. Jim Kelliher

1:10-2:00PM, SURGE 284

GRTS | John Dusel

3:40-5:00PM, SURGE 284

COLLOQUIUM |
No Colloquium This Week

THURSDAY, 23rd

11:10-12:30PM, SURGE 268

FRACTAL RESEARCH GROUP | Dr. Naotaka Kajin, Kobe University
“Measurable Riemannian structure on the Sierpinski gasket”

1:00-2:00PM, SURGE 284

LIE THEORY | Dr. Vyjayanthi Chari

3:40-5:00PM, SURGE 268

MATHEMATICAL PHYSICS & DYNAMICAL SYSTEMS | Dr. Naotaka Kajin, Kobe Uni
“On-diagonal oscillation of the heat kernels on self-similar fractals”

FRIDAY, 24th

11:10-12:00PM, SURGE 268

DIFFERENTIAL GEOMETRY | Dr. Yat Sun Poon

3:10-4:00PM, SURGE 284

COMMUTATIVE ALGEBRA | Dr. Paolo Mantero, UC Riverside
“Projective Dimension of Hypergraphs (part 3)”



Tuesday, January 21st, 4:10 - 5:00 p.m.

Undergrad
Student
Volunteers:

In Surge 284

- TBA

“Eigenfaces: Dimensionality Reduction for Face Recognition”

Kenny Flagg, UC Riverside

Abstract One potential issue in digital image classification is the high dimensionality of images. For example, an image containing 1000 pixels is a point in a 1000-dimensional space, since each pixel is a numerical value describing one aspect of the picture. Principal Component Analysis (PCA) addresses this issue by projecting data into a lower-dimensional subspace using eigenvectors of the covariance matrix as a basis, allowing for simpler and quicker computations. I will explain how PCA works and demonstrate how to apply it to images of faces in Matlab.

Snacks and drinks served!



UNIVERSITY OF CALIFORNIA RIVERSIDE

DEPARTMENT OF MATHEMATICS

Lie Theory

Dr. Mathieu Mansuy
Université Paris VII, France

“Extremal loop weight representations of quantum toroidal algebras (cont.)”

Abstract:

We give different constructions of new integrable representations of quantum toroidal algebras, called extremal loop weight representations. Its definition is given by Hernandez in 2009, following the one of extremal weight representations of quantum affine algebras by Kashiwara. The aim, like in the works of Kashiwara, is to construct finite-dimensional representations of the quantum toroidal algebras, but at roots of unity in this case.

Tuesday, January 22nd, 2014

Surge 284

1:00 p.m. - 2:00 p.m.



UNIVERSITY OF CALIFORNIA RIVERSIDE

DEPARTMENT OF MATHEMATICS

Fractal Research Group

Dr. Naotaka Kajino
Kobe University

“Measurable Riemannian structure on the Sierpinski gasket”

Abstract: On the Sierpinski gasket, Kigami has introduced the notion of the measurable Riemannian structure, with which the “gradient vector fields” of functions, the “Riemannian volume measure” and the “geodesic metric” are naturally associated. This Riemannian structure has recently proved to exhibit various “manifold-like” analytic properties such as the two-sided Gaussian heat kernel bound, Rademacher's almost everywhere differentiability of Lipschitz functions and Weyl's Laplacian eigenvalue asymptotics, despite the fractal nature of the underlying topological space. On the other hand, the geometric properties of this Riemannian structure seem rather different from those of Riemannian manifolds. Indeed, I have recently proved that the curvature-dimension condition of Sturm and Lott-Villani and the measure contraction property of Ohta and Sturm, which both refer to Ricci curvature lower bound, are invalid. In the talk I will review the above-mentioned results, and if time permits I will also mention possible generalization to other fractals. The contents of the talk are covered in my recent review article [1].

[1] Analysis and geometry of the measurable Riemannian structure on the Sierpinski gasket, *Contemp. Math.*, vol. 600, 2013, pp. 91-133, available in <http://www.math.kobe-u.ac.jp/HOME/nkajino/publications.html>

Thursday, January 23rd, 2014

Surge 268

11:10 a.m. - 12:30 p.m.



UNIVERSITY OF CALIFORNIA RIVERSIDE

DEPARTMENT OF MATHEMATICS

Mathematical Physics & Dynamical Systems

Dr. Naotaka Kajino
Kobe University

“On-diagonal oscillation of the heat kernels on self-similar fractals”

Abstract available online:

http://events.ucr.edu/cgi-bin/display.cgi?event_id=40987

or

Look on events.ucr.edu for the listing

Thursday, January 23rd, 2014

Surge 268

3:40 p.m. - 5:00 p.m.



UNIVERSITY OF CALIFORNIA RIVERSIDE

DEPARTMENT OF MATHEMATICS

Commutative Algebra

Dr. Paolo Mantero
UC Riverside

“Projective Dimension of Hypergraphs (part 3)”

Abstract:

This is report of joint work with K-N. Lin (Smith College). We will introduce the definition of hypergraphs associated to an ideal generated by (square-free) monomials -- following work of Kimura-Terai-Yoshida. Then we will establish a few results regarding the projective dimension of monomial ideals whose hypergraphs have a simple shape. (Students that did not listen to previous talks will still be able to understand this talk)

Friday, January 24th, 2014

Surge 284

3:10 p.m. - 4:00 p.m.



UNIVERSITY OF CALIFORNIA, RIVERSIDE

Department of Mathematics

Calendar of Events For the Week of January 27th – 31st, 2014

MONDAY, 27th

3:10-4:00PM, SURGE 268

TOPOLOGY | Dr. Reinhard Schultz

4:10-5:00PM, SURGE 284

GRAD SEMINAR | Parker Williams, UCR
"First and Second Moment Methods"

TUESDAY, 28th

1:00-2:00PM, SURGE 284

LIE THEORY | Peri Shereen, UCR
"Clifford algebras and spin modules"

1:10-2:00PM, SURGE 268

OPERATOR ALGEBRAS | Andrew Monnot, UCR

1:10-2:00PM, SURGE 277*

"More on Noncommutative Tori and Morita Equivalence"

ALGEBRAIC GEOMETRY | Dr. Ziv Ran

4:10-5:00PM, SURGE 284

MATH CLUB | Dr. Kevin Costello
TBA

WEDNESDAY, 29th

11:10-12:00PM, SURGE 268

COMBINATORIAL NUMBER THEORY | Dr. Costello/Dr. Chang

11:10-12:00PM, SURGE 268

PDE & APPLIED MATHEMATICS | Dr. James Kelliher, UCR

12:10-1:00PM, SURGE 268

"Some comments on boundary conditions for the Euler equations"

FLUIDS SEMINAR | Dr. Jim Kelliher

1:10-2:00PM, SURGE 284

GRTS | John Dusel

3:40-5:00PM, SURGE 284

COLLOQUIUM |
No Colloquium This Week

THURSDAY, 30th

11:10-12:30PM, SURGE 268

FRACTAL RESEARCH GROUP | Dr. Michel Lapidus

1:00-2:00PM, SURGE 284

LIE THEORY | Matthew O'Dell, UCR

"Categorification of Algebras and Their Representations"

3:40-5:00PM, SURGE 268

MATHEMATICAL PHYSICS & DYNAMICAL SYSTEMS | Dr. Michel Lapidus

FRIDAY, 31st

11:10-12:00PM, SURGE 268

DIFFERENTIAL GEOMETRY | Dr. Yat Sun Poon, UCR

"Hyperkähler and quaternionic Kähler manifolds with U(1)-symmetry"

3:10-4:00PM, SURGE 284

COMMUTATIVE ALGEBRA | Dr. Paolo Mantero

"Projective Dimension of Hypergraphs (part 4)"



UNIVERSITY OF CALIFORNIA RIVERSIDE

DEPARTMENT OF MATHEMATICS

Graduate Student Seminar

Parker Williams
UC Riverside

“First and Second Moment Methods”

Abstract:

In this talk I will review (mostly for my sake) a fundamental concept in probabilistic combinatorics where the first and later second moments may be used to prove the existence of desired configurations. This can range from sets with given properties to graphs to any other structure you might like to enumerate. I will be presenting this from a no prior knowledge standpoint and the goal will be to demonstrate these methods in a context that you might see how to use them in your own work. For those keeping count let's see how many different ways I spell Chebyshev.

Monday, January 27th, 2014

Surge 284

4:10 p.m. - 5:00 p.m.



UNIVERSITY OF CALIFORNIA RIVERSIDE

DEPARTMENT OF MATHEMATICS

Operator Algebras

Andrew Monnot
UC Riverside

“More on Noncommutative Tori and Morita
Equivalence”

Abstract:

I'll discuss properties of the rotation algebras for varying θ , define the higher dimensional rotation algebras and noncommutative tori, and then I will begin discussing C^* -modules and Morita equivalence of C^* -algebras. After this we can discuss Morita equivalence between rotation algebras and Kronecker foliation algebras--as well as results in K -theory.

Tuesday, January 28th, 2014

Surge 268

1:10 p.m. - 2:00 p.m.



UNIVERSITY OF CALIFORNIA RIVERSIDE

DEPARTMENT OF MATHEMATICS

Lie Theory

Peri Shereen
UC Riverside

“Clifford algebras and spin modules”

Abstract:

A fundamental module for any finite dimensional, simple Lie algebra g is an irreducible module of highest weight ω_i where ω_i is a fundamental weight of g . In the case of A_n it happens that all the fundamental modules are isomorphic to exterior powers of the natural module. In general, such isomorphisms do not always exist. In particular, for B_n and D_n , the fundamental modules associated to the short root (in the case of B_n) and to the spin nodes (in the case of D_n) are called spin modules. This talk will review the construction of Clifford algebras and spin modules. From this construction we will exhibit how the fundamental modules associated to the spin nodes of D_n are spin modules.

Tuesday, January 28th, 2014

Surge 284

1:00 p.m. - 2:00 p.m.



UNIVERSITY OF CALIFORNIA RIVERSIDE

DEPARTMENT OF MATHEMATICS

Lie Theory

Matthew O'Dell
UC Riverside

“Categorification of Algebras and Their Representations”

Abstract:

Categorification is the process of finding higher level structure by replacing sets with categories, functions between sets with functors, and relations between functions with natural transformations of functors. This talk will focus on the categorification of algebras, and representations of these algebras. We will define naive, weak, and strong categorification, and look at some examples.

Thursday, January 30th, 2014

Surge 284

1:00 p.m. - 2:00 p.m.



UNIVERSITY OF CALIFORNIA RIVERSIDE

DEPARTMENT OF MATHEMATICS

Differential Geometry

Dr. Yat Sun Poon
UC Riverside

“Hyperkähler and quaternionic Kähler manifolds with
 $U(1)$ -symmetry”

Abstract:

We review the background and some recent development in this subject, mainly due to Andriy Haydys (J. Geom and Phys) and Nigel Hitchin (Commun Math Phys).

Friday, January 31st, 2014

Surge 268

11:10 a.m. - 12:00 noon



UNIVERSITY OF CALIFORNIA RIVERSIDE

DEPARTMENT OF MATHEMATICS

Commutative Algebra

Dr. Paolo Mantero
UC Riverside

“Projective Dimension of Hypergraphs (part 4)”

Abstract:

We recall a construction of Kimura-Terai-Yoshida that associates a combinatorial object (hypergraph) to an algebraic object (square-free monomial ideal). Today we see how simple combinatorial information on the hypergraph gives us important information regarding the corresponding ideal. This is joint work with K.-N. Lin.

Friday, January 31st, 2014

Surge 284

3:10 p.m. - 4:00 p.m.



UNIVERSITY OF CALIFORNIA, RIVERSIDE

Department of Mathematics

Calendar of Events For the Week of February 3rd – 7th, 2014

MONDAY, 3rd

3:10-4:00PM, SURGE 268

TOPOLOGY | Dr. Reinhard Schultz

TBA

4:10-5:00PM, SURGE 284

GRAD SEMINAR |

TUESDAY, 4th

1:00-2:00PM, SURGE 284

LIE THEORY | Dr. Vyjayanthi Chari

1:10-2:00PM, SURGE 268

OPERATOR ALGEBRAS | Dr. Feng Xu

1:10-2:00PM, SURGE 277*

ALGEBRAIC GEOMETRY | Dr. Ziv Ran

4:10-5:00PM, SURGE 284

MATH CLUB | Scott Manifold, UCR

"GPS Visibility & Dilution of Precision Regions with Level Sets"

WEDNESDAY, 5th

11:10-12:00PM, SURGE 268

COMBINATORIAL NUMBER THEORY | Dr. Costello/Dr. Chang

11:10-12:00PM, SURGE 268

PDE & APPLIED MATHEMATICS | Dr. Juhi Jang

12:10-1:00PM, SURGE 268

FLUIDS SEMINAR | Dr. Jim Kelliher

1:10-2:00PM, SURGE 284

GRTS | John Dusel

3:40-5:00PM, SURGE 284

COLLOQUIUM |

No Colloquium This Week

THURSDAY, 6th

11:10-12:30PM, SURGE 268

FRACTAL RESEARCH GROUP | Dr. Michel Lapidus

1:00-2:00PM, SURGE 284

LIE THEORY | Dr. Vyjayanthi Chari

3:40-5:00PM, SURGE 268

MATHEMATICAL PHYSICS & DYNAMICAL SYSTEMS | Dr. Michel Lapidus

FRIDAY, 7th

11:10-12:00PM, SURGE 268

DIFFERENTIAL GEOMETRY | Dr. Lihan Wang, UC Irvine

"Hodge Theory on Compact Symplectic Manifolds with Boundary"

3:10-4:00PM, SURGE 284

COMMUTATIVE ALGEBRA | Dr. David Rush



Tuesday, February 4th, 4:10 - 5:00 p.m.

Undergrad
Student
Volunteers:

In Surge 284

- TBA

“GPS Visibility & Dilution of Precision Regions with Level Sets”

Scott Manifold, UC Riverside

GPS is a valuable tool, and as such, the optimization and accuracy of the techniques to measure the performance of the satellites are of paramount importance. Two major measures relating to performance are GPS Visibility and Dilution of Precision (DOP). Visibility is defined by regions that share a direct line of sight with sufficiently many satellites in orbit, while DOP is a metric correlated with GPS user error. The current system to determine the visibility and DOP of these satellites is accurate and useful, however it is time consuming. Satellite Visibility regions and Dilution of Precision calculations for GPS satellites represent a natural application of Level Set Methods: a method to represent and track the movement of interfaces and contours. Nevertheless, level set analysis has remained absent with respect to computational satellite performance simulations. The talk will explore some of the implementations of these Level Set Methods to GPS simulations along with various optimization techniques to improve computational efficiency.

Snacks and drinks served!



UNIVERSITY OF CALIFORNIA RIVERSIDE

DEPARTMENT OF MATHEMATICS

Differential Geometry

Dr. Lihan Wang
UC Irvine

“Hodge Theory on Compact Symplectic Manifolds with Boundary”

Abstract:

We study Hodge theory for symplectic Laplacians on compact symplectic manifolds with boundary. These Laplacians are novel as they can be associated with symplectic cohomologies and be of fourth-order. We prove various Hodge decompositions and use them to obtain the isomorphisms between the cohomologies and the spaces of harmonic fields with certain prescribed boundary conditions. In order to establish Hodge theory in the non-vanishing boundary case, we are required to introduce new boundary conditions which we call J-Dirichlet and J-Neumann. When the boundary is of contact type, these conditions are directly related to the Reeb vector field. As an application, our results can be used to solve boundary value problems of differential forms.

Friday, February 7th, 2014

Surge 268

11:10 a.m. - 12:00 noon



UNIVERSITY OF CALIFORNIA, RIVERSIDE

Department of Mathematics

Calendar of Events For the Week of February 24th – 28th, 2014

MONDAY, 24th

3:10-4:00PM, SURGE 268

TOPOLOGY | Dr. Reinhard Schultz

4:10-5:00PM, SURGE 284

GRAD SEMINAR | Jason Erbele, UCR
"Categories in Control"

TUESDAY, 25th

1:00-2:00PM, SURGE 284

LIE THEORY | Dr. Vyjayanthi Chari

1:10-2:00PM, SURGE 268

OPERATOR ALGEBRAS | Dr. Feng Xu

1:10-2:00PM, SURGE 277*

ALGEBRAIC GEOMETRY | Dr. Ziv Ran

3:40-5:00PM, SURGE 284

SPECIAL COLLOQUIUM

◆ Specifics TBA Day of Event ◆

4:10-5:00PM, SURGE 285*

MATH CLUB | Dr. Kevin Costello

Research Meeting in Surge 285

WEDNESDAY, 26th

11:10-12:00PM, SURGE 268

COMBINATORIAL NUMBER THEORY | Dr. Costello/Dr. Chang

11:10-12:00PM, SURGE 268

PDE & APPLIED MATHEMATICS | Dr. Juhi Jang

12:10-1:00PM, SURGE 268

FLUIDS SEMINAR | Dr. Jim Kelliher

1:10-2:00PM, SURGE 284

GRTS | John Dusel

3:40-5:00PM, SURGE 284

SPECIAL COLLOQUIUM

◆ Specifics TBA Day of Event ◆

THURSDAY, 27th

11:10-12:30PM, SURGE 268

FRACTAL RESEARCH GROUP | Sean Watson, UCR

"The distance and tube zeta functions"

1:00-2:00PM, SURGE 284

LIE THEORY | Dr. Vyjayanthi Chari

3:40-5:00PM, SURGE 284

SPECIAL COLLOQUIUM

◆ Specifics TBA Day of Event ◆

3:40-5:00PM, SURGE 268

MATHEMATICAL PHYSICS & DYNAMICAL SYSTEMS | Dr. A. Vèlez-Santiago, UCR

"Variable exponent parabolic equations with Wentzell-Robin boundary conditions on fractal domains"

FRIDAY, 28th

11:10-12:00PM, SURGE 268

DIFFERENTIAL GEOMETRY | Dr. Fred Wilhelm, UCR

"How to Lift Positive Ricci Curvature"

3:10-4:00PM, SURGE 284

COMMUTATIVE ALGEBRA | Dr. David Rush

3:40-5:00PM, SURGE 284

SPECIAL COLLOQUIUM

◆ Specifics TBA Day of Event ◆



UNIVERSITY OF CALIFORNIA RIVERSIDE

DEPARTMENT OF MATHEMATICS

Graduate Student Seminar

Jason Erbele
UC Riverside

“Categories in Control”

Abstract:

Control theory is a branch of engineering that studies dynamical systems with inputs and outputs, and how to optimize their behavior. Diagrams called signal-flow graphs are frequently used to describe these systems. These signal-flow graphs exhibit features of a symmetric monoidal category, bearing a striking resemblance to the depiction of morphisms as string diagrams. This notion is made more precise by considering the symmetric monoidal categories \mathbf{FinRel} and its subcategory, $\mathbf{FinVect}$. These categories have morphisms that correspond to signal-flow graphs, and are equivalent to symmetric monoidal categories generated by the object k , a generating set of morphisms, and a set of relations between morphisms.

Monday, February 24th, 2014

Surge 284

4:10 p.m. - 5:00 p.m.



UNIVERSITY OF CALIFORNIA RIVERSIDE

DEPARTMENT OF MATHEMATICS

Differential Geometry

Dr. Fred Wilhelm
UC Riverside

“How to Lift Positive Ricci Curvature”

Abstract:

We show how to lift positive Ricci and almost non-negative curvatures from an orbit space M/G to the corresponding G -manifold, M : We apply the results to get new examples of Riemannian manifolds that satisfy both curvature conditions simultaneously.

THIS IS A DUPLICATE OF A TALK I GAVE LAST QUARTER

Friday, February 28th, 2014

Surge 268

11:00 a.m. - 12:00 noon



UNIVERSITY OF CALIFORNIA, RIVERSIDE

Department of Mathematics

Calendar of Events For the Week of March 3rd – 7th, 2014

MONDAY, 3rd

3:10-4:00PM, SURGE 277*

3:40-5:00PM, SURGE 284♦

4:10-5:00PM, SURGE 284

TUESDAY, 4th

1:00-2:00PM, SURGE 284

1:10-2:00PM, SURGE 268

1:10-2:00PM, SURGE 277*

4:10-5:00PM, SURGE 284

WEDNESDAY, 5th

11:10-12:00PM, SURGE 268

11:10-12:00PM, SURGE 268

12:10-1:00PM, SURGE 268

1:10-2:00PM, SURGE 284

THURSDAY, 6th

11:10-12:30PM, SURGE 268

1:00-2:00PM, SURGE 284

1:00-2:00PM, SURGE 268

3:40-5:00PM, SURGE 284♦

3:40-5:00PM, SURGE 268

FRIDAY, 7th

11:10-12:00PM, SURGE 268

3:10-4:00PM, TBA

3:40-5:00PM, SURGE 284♦

TOPOLOGY | Soheil Safii, UCR

“Homology with Twisted Coefficients”

SPECIAL COLLOQUIUM

♦Speaker Information TBA at the event♦

GRAD SEMINAR |

TBA

LIE THEORY | Dr. Liping Li, UCR

“Introduction to DG categories”

OPERATOR ALGEBRAS | Dr. Feng Xu

ALGEBRAIC GEOMETRY | Dr. Ziv Ran

MATH CLUB | Dr. Kevin Costello, UCR

Viewing: “The Prisoner of Benda”

COMBINATORIAL NUMBER THEORY | Dr. Costello/Dr. Chang

PDE & APPLIED MATHEMATICS | Dr. Juhi Jang

FLUIDS SEMINAR | Dr. Jim Kelliher

GRTS | John Dusel

FRACTAL RESEARCH GROUP | Dominick Scaletta

“Disentangling algebras are Hopf algebras”

LIE THEORY | Dr. Liping Li, UCR

“Introduction to DG categories (cont’d.)”

DISSERTATION DEFENSE | Chunghoon Kim, UCR

“Deformations of compact holomorphic Poisson manifolds and algebraic Poisson schemes”

SPECIAL COLLOQUIUM

♦Speaker Information TBA at the event♦

MATHEMATICAL PHYSICS & DYNAMICAL SYSTEMS | Edward Voskianian, UCR

“Calculating the Kazhdan constant of the additive group \mathbb{Z}_p for a given prime $p > 2$ ”

DIFFERENTIAL GEOMETRY | Dr. Yunhui Wang, Rice University

“Geometry and topology of open finite volume Hadamard manifolds with bounded curvatures”

COMMUTATIVE ALGEBRA | Dr. David Rush

SPECIAL COLLOQUIUM

♦Speaker Information TBA at the event♦



UNIVERSITY OF CALIFORNIA RIVERSIDE

DEPARTMENT OF MATHEMATICS

Lie Theory

Dr. Liping Li
UC Riverside

“Introduction to DG categories”

Abstract:

Differential graded categories are widely used in homological algebra, representation theory, and algebraic geometry. The purpose of these talks is to provide an introduction to the theory of DG categories, focusing on definitions, basic properties, main results, and its relationship to derived categories and triangulated categories. To minimize preliminaries, these talks will be self-contained except some elementary category theory and homological algebra such as categories and functors, chain complexes and chain maps.

References:

1. On Differential graded categories by B. Keller (available on arXiv);
2. Lectures on DG-categories by T. Bertrand (available on arXiv);
3. Deriving DG categories by B. Keller
(<http://www.math.jussieu.fr/~keller/publ/ddc.pdf>)

Tuesday, March 4th & Thursday March 6th, 2014

Surge 284

1:00 p.m. - 2:00 p.m.



Tuesday, March 4th, 4:10 - 5:00 p.m.

Undergrad
Student
Volunteers:

In Surge 284

- TBA

Viewing of "The Prisoner of Benda"

Join us this week for a viewing of "The Prisoner of Benda", a Futurama episode written by Math PhD Ken Keeler. The plot is centered around a body-switching machine and a theorem involving permutation groups. After watching the episode, we will discuss the proof of the theorem.

Snacks and drinks served!



UNIVERSITY OF CALIFORNIA RIVERSIDE

DEPARTMENT OF MATHEMATICS

Dissertation Defense

Chunghoon Kim
UC Riverside

“Deformations of compact holomorphic Poisson
manifolds and algebraic Poisson schemes”

Thursday March 6th, 2014

Surge 268

1:00 p.m. - 2:00 p.m.



UNIVERSITY OF CALIFORNIA RIVERSIDE

DEPARTMENT OF MATHEMATICS

Differential Geometry

Dr. Yunhui Wang
Rice University

“Geometry and topology of open finite volume
Hadamard manifolds with bounded curvatures”

Abstract:

This talk will discuss some recent results on open complete manifolds of nonpositive sectional curvatures. Some open problems and conjectures will be mentioned. Parts of this work are joint with Avramidi and Phan.

Friday, March 7th, 2014

Surge 268

11:10 a.m. - 12:00 noon



UNIVERSITY OF CALIFORNIA, RIVERSIDE

Department of Mathematics

Calendar of Events For the Week of March 10th – 14th, 2014

MONDAY, 10th

3:10-4:00PM, SURGE 268

TOPOLOGY | Dr. Reinhard Schultz

3:40-5:00PM, SURGE 284♦

SPECIAL COLLOQUIUM

♦Speaker Information TBA at the event♦

4:10-5:00PM, SURGE 284

GRAD SEMINAR |

TBA

TUESDAY, 11th

1:00-2:00PM, SURGE 284

LIE THEORY | Dr. Vyjayanthi Chari

1:10-2:00PM, SURGE 268

OPERATOR ALGEBRAS | Dr. Feng Xu

1:10-2:00PM, SURGE 277*

ALGEBRAIC GEOMETRY | Dr. Ziv Ran

4:10-5:00PM, SURGE 284

MATH CLUB | Dr. Kevin Costello

TBA

WEDNESDAY, 12th

11:10-12:00PM, SURGE 268

COMBINATORIAL NUMBER THEORY | Dr. Costello/Dr. Chang

11:10-12:00PM, SURGE 268

PDE & APPLIED MATHEMATICS | Dr. Juhi Jang

12:10-1:00PM, SURGE 268

FLUIDS SEMINAR | Dr. Jim Kelliher

1:10-2:00PM, SURGE 284

GRTS | John Dusel

THURSDAY, 13th

11:10-12:30PM, SURGE 268

FRACTAL RESEARCH GROUP | Scott Roby, UCR

TBA

1:00-2:00PM, SURGE 284

LIE THEORY | Dr. Vyjayanthi Chari

3:40-5:00PM, SURGE 284♦

SPECIAL COLLOQUIUM

♦Speaker Information TBA at the event♦

3:40-5:00PM, SURGE 268

MATHEMATICAL PHYSICS & DYNAMICAL SYSTEMS | Andrew Monnot, UCR

“Fractal membranes and the Riemann hypothesis”

FRIDAY, 14th

11:10-12:00PM, SURGE 268

DIFFERENTIAL GEOMETRY | Dr. Ruifang Song, University of Wisconsin, Madison

“Period integrals and tautological systems”

3:10-4:00PM, SURGE 284

COMMUTATIVE ALGEBRA | Dr. David Rush



UNIVERSITY OF CALIFORNIA RIVERSIDE

DEPARTMENT OF MATHEMATICS

Differential Geometry

Dr. Ruifang Song
University of Wisconsin-Madison

“Period integrals and tautological systems”

Abstract:

We introduce a system of differential equations associated to a smooth algebraic variety X acted by a complex Lie group G and a G -linearized line bundle L on X . We show that this system is regular holonomic if G acts on X with finitely many orbits. When X is a partial flag variety, we show that this system governs the period integrals on Calabi-Yau hypersurfaces in X . When X is a toric variety, our construction recovers GKZ systems which have played important roles in the study of mirror symmetry of Calabi-Yau hypersurfaces in toric varieties.

Friday, March 14th, 2014

Surge 268

11:10 a.m. - 12:00 noon