Analysis and Partial Differential Equations  
July 8 - July 12, 2013, UBC  
Earth Sciences Building, 2207 Main Mall

Getting Started

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- All Speaker Abstracts can be found beginning on Page 4.

**Monday July 8th (ESB 1012)**

08:30-08:55    Registration
08:55-09:00    Welcome
09:00-09:45    **Yann Brenier**: Volume and topology preserving diffusion equations
09:45-10:15    Coffee break (ESB Lobby)
10:15-11:00    **Wilfrid Gangbo**: A class of variational problems involving polyconvex integrands.
11:05-11:50    **Robert McCann**: Academic wages and pyramid schemes: a mathematical model
11:50-13:30    Lunch (Self Catered: See last page for dining options on campus)
13:50-14:35    **Jalal Shatah**: Resonances in PDE’s
14:40-15:25    **Oliver Druet**: The Einstein-Lichnerowicz constraint system
15:25-15:55    Coffee break (ESB Lobby)
15:55-16:40    **Mary Pugh**: Thin Liquid Films with Driving
16:45-17:30    PDE Conference Reception- ESB Atrium

**Tuesday July 9th (ESB 2012)**

09:00-09:45    **Sun-Yung Alice Chang**: On a class of non-local conformal invariants on asymptotic hyperbolic manifolds
09:45-10:15    Coffee break (ESB 2012 Lobby)
10:15-11:00    **Pengfei Guan**: Two uniqueness Theorems in geometry, old and new.
11:05-11:50    **Xavier Cabre**: Sharp isoperimetric inequalities with densities via the ABP method
11:50-13:50    Lunch
13:50-14:35    **Chang-Shou Lin**: Mean field equations, hyper-elliptic curves and modular forms
14:40-15:25    **Fanghua Lin**: Geometric Measure and Topology of Nodal Sets
15:55-16:40    **Frederic Robert**: Sign-changing solution to scalar-curvature type equations: the case of a degenerate metric
16:45-17:30    **Yanyan Li**: TBA
Wednesday July 10th (ESB 2012)

09:00-09:45  Walter Craig: Dynamics of near-parallel vortex filament interactions.
09:45-10:15  Coffee break (ESB 2012 Lobby)
10:15-11:00  Dominique Bakry: Diffusions and orthogonal polynomials
11:05-11:50  Eric Sere: Energy minimization in Peierls models of one-dimensional molecular chains
11:50-13:50  Lunch (Self Catered)
13:50-14:35  Paul Rabinowitz: Multi-transition solutions for Allen-Cahn model equations
14:40-15:25  Angela Pistoia: New concentration phenomena in some 2-dimensional problems
15:55-16:40  Vitali Milman: Geometric Study of Convex and Quasi-Concave Functions in $\mathbb{R}^n$
18:00        PDE Banquet: University Golf Club. See map on page 4

Thursday July 11th (ESB 2012)

09:00-09:45  Yiming Long: Multiple closed geodesics on spheres
09:45-10:15  Coffee break (ESB 2012 Lobby)
10:15-11:00  Gideon Schechtman: A quantitative version of the commutator theorem for zero trace matrices
11:05-11:50  Maria J. Esteban: Spectral estimates in spheres and compact manifolds
11:50-13:50  Lunch (Self Catered)
13:50-14:35  Michael Struwe: The supercritical Lane-Emden equation and its gradient flow
14:40-15:25  Filomena Pacella: Multibump analysis and bubble towers for Lane Emden problems in dimension 2
15:55-16:40  Pierpaolo Esposito: Non-topological condensates for the self-dual Chern-Simons-Higgs model
16:45-17:30  Claude Viterbo: TBA

Friday July 12th (ESB 2012)

09:00-09:45  Cedric Villani: TBA
09:45-10:15  Coffee break (ESB 2012 Lobby)
10:15-11:00  Nader Masmoudi: Gevrey spaces: Prandtl system and nonlinear inviscid damping for 2D Euler.
11:05-11:50  Alessio Figalli: Stability results for sumsets in $\mathbb{R}^n$
11:50-13:50  Lunch (Self Catered)
13:50-14:35  Walter Schachermayer: An optimal transport approach to martingale inequalities and the Skorhod embedding problem
14:40-15:25  Gang Tian: Regularity of Ricci curvature equations
15:55-16:40  Neil Trudinger: Weak continuity of nonlinear operators
Directions

ESB Building Ground Floor Plan:

Banquet Location Map: Wednesday July 10th, 2013: UBC Golf Club: 5185 University Blvd

UBC Golf Club: 5185 University Blvd

A

2207 Main Mall, Vancouver:

Walk to UBC Trolley loop (about 6 minutes)

UBC Trolley Loop: Take either of these buses

Bus – 4, or 14 - UBC/Downtown or Bus 9- Alma/ Commercial

Alight at EB University Blvd at 5100 Block, Cross University Boulevard to enter Golf Club

B

UBC Golf Club: 5185 University Blvd Exact coin fare is needed $2.75 per trip, if using transit; This distance is walkable in 30-45 minutes
General Travel Directions:


Airport to UBC: Easiest by taxi (25min, around $30). If your accommodation is at Walter H Gage Towers, please give them the address: 5959 Student Union Boulevard, UBC. By public transport, take the Canada Line (rail) to Broadway-City Hall station. From Broadway-City Hall station, cross Broadway and Cambie streets to get to the #99 UBC bus stop in front of London Drugs. Tickets (valid for the whole journey to UBC) can be purchased from the machine in the airport station. Cost: approximately $6. Journey time: Circa more than 1 hour

UBC Bus Loop/ Gage to Earth Science Building (ESB) 2207 Main Mall: A quick 10min walk. See UBC map. Walk west past the student union building, cross East Mall and get onto Main Mall. Turn left (South) on Main Mall and Earth Science Building will be on your right after a few minutes. It is a large new building, and is on Main Mall directly across from the Beatty Biodiversity Centre and prominent blue whale skeleton.

Public Transit: Feel free to search and plan your public transport rides by visiting http://www.translink.ca/, where directions, ticket costs and bus schedules are indicated.

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Speaker

Abstracts
Abstracts


Speaker 1: Dominique Bakry

Toulouse

Title. Diffusions and orthogonal polynomials

Abstract. Diffusion semigroups are described through their generators, which are in general in \( \mathbb{R}^n \) or an open set in it second order differential operators of the form

\[
L(f)(x) = \sum_{ij} a^{ij}(x) \frac{\partial^2 f}{\partial x_i \partial x_j} + \sum_i b_i(x) \frac{\partial f}{\partial x_i}.
\]

The easiest cases are when one is able to diagonalize this operator in an basis of orthogonal polynomials, since then one is able to have a quite explicit description of the associated law of the underlying process. In dimension 1, there are not many examples of such a situation. It reduces to the family of Jacobi, Laguerre and Hermite polynomials. In higher dimension, many examples come from Lie group actions of homogeneous spaces, or generalizations of them, through root systems or other algebraic constructions.

We shall give a complete characterization of the problem: on which open sets in \( \mathbb{R}^n \) one may expect to find a probability measure for which the associated orthogonal polynomials are eigenvectors of diffusion operators.

We shall give a complete description of all the models in dimension 2, where we are able to completely solve this problem. There are exactly 11 compact sets (up to affine transformations), and 7 non compact ones, on which there exist such a measure. We shall also describe all the associated measures and operators.

Speaker 2: Yann Brenier

CNRS, CMLS, Ecole Polytechnique, FR-91128 Palaiseau, France

Title. Volume and topology preserving diffusion equations

Abstract. In sharp contrast with the usual heat equation, some degenerate diffusion equations enjoy the property that the level sets of their solutions keep their volume and their topology unchanged during the evolution, at least formally. These equations admit as stationary solutions all scalar functions which are functions of their own Laplacian. (This corresponds, in two space dimensions, to all stationary solutions of the Euler equations for incompressible fluids.) For such equations, we provide a suitable concept of "dissipative solutions" that exist globally in time and are unique as long as they stay \( C^{1,1} \) in space (which we are not able to prove). At the discrete level, we will relate these equations and their equilibrium states to the quadratic assignment problem, a well known NP problem in combinatorial optimization.
Speaker 3: Xavier Cabre  
*ICREA and UPC, Barcelona*

**Title.** Sharp isoperimetric inequalities with densities via the ABP method  

**Abstract.** We prove some old and new isoperimetric inequalities with the best constant using the ABP method applied to an appropriate linear Neumann problem. More precisely, we obtain a new family of sharp isoperimetric inequalities with weights (also called densities) in open convex cones of $\mathbb{R}^n$. Our result applies to all nonnegative homogeneous weights satisfying a concavity condition in the cone. Remarkably, Euclidean balls centered at the origin (intersected with the cone) minimize the weighted isoperimetric quotient, even if all our weights are nonradial —except for the constant ones. We also study the anisotropic isoperimetric problem in convex cones for the same class of weights. We prove that the Wulff shape (intersected with the cone) minimizes the anisotropic weighted perimeter under the weighted volume constraint. As a particular case of our results, we give new proofs of two classical results: the Wulff inequality and the isoperimetric inequality in convex cones of Lions and Pacella.

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Speaker 4: Sun-Yung Alice Chang  
*Princeton University*

**Title.** On a class of non-local conformal invariants on asymptotic hyperbolic manifolds  

**Abstract.** We will discuss properties of a class of conformal invariants in conformal geometry and their connection to geometric quantities on asymptotically hyperbolic manifolds. Special emphasis will be on the extension theorem of Caffarelli-Silvestre and applications in this setting.

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Speaker 5: Walter Craig  
*McMaster University*

**Title.** Dynamics of near-parallel vortex filament interactions  

**Abstract.** Mathematical analysts have developed techniques for the phase space analysis of the dynamics of many model nonlinear Hamiltonian PDEs. In this talk I will describe some applications and extensions of these ideas to a problem in fluid dynamics that concerns the interaction of two near-parallel vortex filaments in three dimensions. In addition, as well as generalizations of this problem, I will speculate about further applications of the techniques of Hamiltonian PDEs to other nonlinear systems of fluid dynamics that are nonlinear evolution problems of physical significance.

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Speaker 6: Oliver Druet  
*Lyon*

**Title.** The Einstein-Lichnerowicz constraint system  

**Abstract.** We investigate the constraint system obtained via the conformal method when trying to get initial data for the Einstein equation coupled with a scalar field. We shall give the main
existence results known up to now and discuss stability and compactness issues for this system. These are the first results obtained in the coupled case when the Yamabe class of the manifold is positive.

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**Speaker 7: Pierpaolo Esposito**

*Rome III*

**Title.** Non-topological condensates for the self-dual Chern-Simons-Higgs model

**Abstract.** For the abelian self-dual Chern-Simons-Higgs model I will discuss existence issues of periodic vortex configurations – the so-called condensates– of non-topological type for small values of the Chern-Simons parameter $k$. We provide a positive answer for the existence of non-topological condensates with magnetic field concentrated at some of the vortex points (as a sum of Dirac measures) as $k$ tends to 0. Joint work with M. del Pino, M. Musso and P. Figueroa.

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**Speaker 8: Maria J. Esteban**

*Paris-Dauphine*

**Title.** Spectral estimates in spheres and compact manifolds

**Abstract.** In this talk I will present recent work with Jean Dolbeault and Ari Laptev about optimal estimates of the principal eigenvalue of Schrödinger operators on the sphere, or in general, on general compact manifolds, based on the best constants for some functional inequalities. These estimates show that for compact manifolds both Keller and Lieb-Thirring-like estimates do not hold true with the usual constants and exponents as in the Euclidian space.

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**Speaker 9: Alessio Figalli**

*Austin*

**Title.** Stability results for sumsets in $\mathbb{R}^n$

**Abstract.** Given a Borel $A$ in $\mathbb{R}^n$ of positive measure, one can consider its semisum $S = (A+A)/2$. It is clear that $S$ contains $A$, and it is not difficult to prove that $S$ and $A$ have the same measure if and only if $A$ is equal to his convex hull minus a set of measure zero. We now wonder whether this statement is “stable”: if the measure of $S$ is close to the one of $A$, is $A$ close to his convex hull? More in general, one may consider the semisum of two different sets $A$ and $B$, in which case our question corresponds to proving a stability result for the Brunn-Minkowski inequality. When $n = 1$, one can approximate a set with finite unions of intervals to translate the problem onto $\mathbb{Z}$, and in the discrete setting this question becomes a well studied problem in additive combinatorics, usually known as Freiman’s Theorem. In this talk I’ll review some results in the one-dimensional discrete setting, and discuss their extension to arbitrary dimension.
Speaker 10: Wilfrid Gangbo  
*Georgia Tech*

**Title.** A class of variational problems involving polyconvex integrands.

**Abstract.** Finding the dual problem of minimization problems involving polyconvex integrands (instead of convex integrands), remains an outstanding problem in the calculus of variations. Duality is a powerful tool for studying uniqueness and stability of minimizers, and for writing the Euler-Lagrange equations when standard growth conditions, as imposed by C.B. Morrey in his pioneer work in 1952, fail to hold. In this talk, motivated by integrands which appear in the study of Ogden material, we consider a collection of discrete variational problems which would help tackling some of the challenges in the calculus of variations. (This is a joint work with R. Awi).

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Speaker 11: Pengfei Guan  
*McGill*

**Title.** Two uniqueness Theorems in geometry, old and new.

**Abstract.** We discuss two uniqueness theorem in classical differential geometry: Cohn-Vossen’s rigidity theorem and Alexandrov uniqueness theorem for $C^2$ compact convex surfaces in $\mathbb{R}^3$. We present a new proof of Alexandrov’s theorem using Bers-Nirenberg’s weak uniqueness continuation theorem for general convex surfaces in $\mathbb{R}^3$. In another direction, we prove a higher dimensional Cohn-Vossen rigidity theorem for compact hypersurfaces with positive scalar curvature in $\mathbb{R}^n$.

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Speaker 12: Yanyan Li  
*Rutgers*

**Title.** TBA

**Abstract.** TBA

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Speaker 13: Chang-Shou Lin  
*National Taiwan University*

**Title.** Mean field equations, hyper-elliptic curves and modular forms

**Abstract.** I will explain how mean field equations is naturally related to hyper-elliptic curves and modular forms. In literature, this hyper-elliptic curve arises also in the study of KdV equation as the spectral curves. We show there is a modular form attached to this curve. So this is the case of type 2 in the mean field equations. As the case of type 1, the modular forms are also naturally entered. I will explain it on the simplest situations: the mean field equation with $4\pi$ and $8\pi$ singular source. The modular form is the Eisenstein series of weight one associated with $N$-torsion points. This series was first discovered by Hecke. Our PDE results provide a deformation of those Modular forms. As an application of the PDE results together with the theory of modular forms, we completely determine the geometry of critical points of the Green function at any torus.
Speaker 14: Fanghua Lin
New York University

Title. Geometric Measure and Topology of Nodal Sets

Abstract. The aim of this talk is to illustrate the relations between the rates of grow of solutions of elliptic equations (local or global) with the complexity of their nodal sets through the controls on the geometric measures and the total Betti numbers. The basic ideas involved are quantitative versions of several classical theorems in algebraic geometry and geometric measure theoretic arguments.

Speaker 15: Yiming Long
Chern Institute of Mathematics, Nankai University

Title. Multiple closed geodesics on spheres

Abstract. The problem of closed geodesics is a traditional and important topic in dynamical systems and differential geometry. There is a long standing conjecture that there exist infinitely many distinct closed geodesics on every compact Riemannian manifold. The current interest on this problem is on compact simply connected manifolds including spheres. So far not much is known on the multiplicity of closed geodesics on such manifolds, besides the result of Gromoll and Meyer in 1969, when their dimensions are at least 3. Recently, Dr. Huagui Duan and myself proved the following Theorem: There exist always at least 2 distinct closed geodesics on every compact simply connected Finsler (including Riemannian) manifold whose dimension is at least 2. In this lecture, I shall give a brief survey on the study of the problem of closed geodesics and explain some ideas in the proof of the above theorem.

Speaker 16: Nader Masmoudi
New York University

Title. Gevrey spaces: Prandtl system and nonlinear inviscid damping for 2D Euler.

Abstract. We will discuss two recent applications of Gevrey spaces: The first one is the local existence of the Prandtl system without analyticity and without the Oleinik monotonicity assumptions. More precisely, we assume Gevrey regularity in the horizontal variable (joint work with David Gerard-Varet). The second one is the global asymptotic stability of shear flows close to planar Couette flow in the 2D incompressible Euler equations. Specifically, given an initial perturbation of the Couette flow which is small in a suitable Gevrey space, we show that the velocity converges strongly in $L^2$ to another shear flow which is not far from Couette. This strong convergence is usually referred to as “inviscid damping” and is analogous to Landau damping in the Vlasov-Poisson system (joint work with Jacob Bedrossian).
Speaker 17: Robert McCann

Toronto

Title. Academic wages and pyramid schemes: a mathematical model

Abstract. Wages are determined by supply and demand. In a steady state economy, individuals will choose between being workers, managers, or teachers, depending on their skills and market conditions. But these skills are determined in part by the education market. Some individuals participate in the education market twice, eventually marketing as teachers the skills they acquired as students. This feedback mechanism has the potential to produce larger and larger wages for the few most highly skilled individuals at the top of the market. We analyze this phenomena using a toy model. We show that a competitive equilibrium exists, and it displays a phase transition from bounded to unbounded wage gradients, depending on whether or not the cumulative influence of each teacher increases or decreases as we pass through successive generations of their students.

Based on work in progress with Alice Erlinger, Xianwen Shi, Aloysius Siow, and Ronald Wolthoff.

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Speaker 18: Vitali Milman

Tel Aviv University

Title. Geometric Study of Convex and Quasi-Concave Functions in $\mathbb{R}^n$

Abstract. The plan of the talk (instead of abstract):

1. Duality and new structures on the family of convex (and log-concave) functions in $\mathbb{R}^n$

2. Classical constructions in analysis which appear (uniquely) from elementary (simplest) properties.

3. Extension of Minkowski polarization result to the classes of log-concave and quasi-concave functions; Mixed integrals.

The talk is built to be understandable to graduate students.

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Speaker 19: Filomena Pacella

Rome Sapienza

Title. Multibump analysis and bubble towers for Lane Emden problems in dimension 2

Abstract. I will describe some recent results about concentration phenomena for solutions of the Lane Emden Dirichlet problem in dimension 2, when the exponent of the nonlinearity tends to infinity. The analysis is done for positive and sign changing solutions and shows that a suitable rescaling of the solutions can converge to a limit problem which can be either a regular or a singular radial Liouville problem in the plane.

As a consequence we get estimates on the concentration levels and prove the existence of a sign changing bubble tower solution in some bounded symmetric domains.
Speaker 20: Angela Pistoia

Rome I

Title. New concentration phenomena in some 2-dimensional problems

Abstract. I will show some new existence results of solutions to the sinh-Poisson equation and to the Toda system obtained in collaboration with M.Grossi, M.Musso and J Wei

Speaker 21: Mary Pugh

University of Toronto

Title. Thin Liquid Films with Driving

Abstract. We present two thin liquid film problems with driving. The first problem is experimentally motivated and considers questions such as steady states and the existence of dynamic solutions. The second problem is more PDE-motivated and considers questions such as the presence (or absence) of finite-time blow-up.

In the first problem, we consider a horizontal cylinder, rotating about its center. A viscous fluid is on the outside of the cylinder, coating the cylinder as it rotates. We consider a lubrication approximation of the Navier Stokes equations for the regime in which the fluid film is relatively thin and the surface tension is relatively large. The resulting lubrication model may have no steady state, a unique steady state, or more than one steady state. Using both numerics and analysis, we consider the dynamics of this flow, including whether or not solutions can become singular in finite time.

In the second problem, we consider a long-wave unstable thin film problem $u_t = -(u^n u_{xxx})_x - B(u^m u_x)_x$. The dynamics are strongly affected by the balance between the exponents $n$ and $m$. We discuss the subcritical, critical, and supercritical regimes for the equation and present new results for finite-time blow-up for the problem on the line.

This is joint work with Marina Chugunova (Claremont Graduate University) and Roman Taranets (Institute of Applied Mathematics and Mechanics of NAS of Ukraine).

Speaker 22: Paul Rabinowitz

University of Wisconsin

Title. Multi-transition solutions for Allen-Cahn model equations

Abstract. We survey some recent joint work with Jaeyoung Byeon on the existence of various kinds of multi-transition solutions for a class of spatially dependent Allen-Cahn model equations.

Speaker 23: Frederic Robert

Nancy

Title. Sign-changing solution to scalar-curvature type equations: the case of a degenerate metric
Abstract. Given \((M, g)\) a compact Riemannian manifold of dimension \(n > 2\), we are interested in the existence of blowing-up sign-changing families \((u_\epsilon)_{\epsilon > 0} \in C^{2,\theta}(M), \theta \in (0, 1)\), of solutions to
\[
\Delta_g u_\epsilon + h u_\epsilon = |u_\epsilon|^{\frac{4}{n-2}-\epsilon} u_\epsilon \quad \text{in} \quad M
\]
where \(\Delta_g := -\text{div}_g(\nabla)\) and \(h \in C^{0,\theta}(M)\) is a potential. We prove that such families exist in two main cases: in small dimension \(n \in \{3, 4, 5, 6\}\) for any potential \(h\) or in any dimension when \(h \equiv \frac{n-2}{4(n-1)} R_g\) and \((M, g)\) is locally conformally flat. These examples complete previous existence and nonexistence results on blowing-up solutions and allow to have a complete panorama of the stability/instability of critical elliptic equations of scalar curvature type on compact manifolds, in particular when degenerate metrics are involved. The changing of the sign is necessary due to the compactness results of Druet and Schoen. This is joint work with Jérôme Vétois.

Speaker 24: Walter Schachermayer
Vienna
Title. An optimal transport approach to martingale inequalities and the Skorhod embedding problem
Abstract. We combine the duality theory for the optimal transport problem with the idea of filtrations and the integration theory of stochastic processes. For example, we provide a pointwise proof of Doob’s classical maximal inequality, which also allows for a financial interpretation of this theorem and gives a slightly sharper result. We also present a pathwise approach to the problem of Skorohod embedding.

Speaker 25: Gideon Schechtman
Weizmann
Title. A quantitative version of the commutator theorem for zero trace matrices
Abstract. As is well known, a complex \(m \times m\) matrix \(A\) is a commutator (i.e., there are matrices \(B\) and \(C\) of the same dimensions as \(A\) such that \(A = [B, C] = BC - CB\)) if and only if \(A\) has zero trace. If \(\|\cdot\|\) is the operator norm from \(\ell_2^m\) to itself and \(|\cdot|\) any ideal norm on \(m \times m\) matrices then clearly for any \(A, B, C\) as above \(|A| \leq 2\|B\||C|\).

Does the converse hold? That is, if \(A\) has zero trace are there \(m \times m\) matrices \(B\) and \(C\) such that \(A = [B, C]\) and \(\|B\||C| \leq K|A|\) for some absolute constant \(K\)? If not, what is the behavior of the best \(K\) as a function of \(m\)?

I’ll give some partial answers to this problem, one for \(|\cdot| = \|\cdot\|\) (based on joint work with Johnson and Ozawa) and one for \(|\cdot| = \text{the Hilbert–Schmidt norm}\).

Speaker 26: Eric Sere
Paris-Dauphine
Title. Energy minimization in Peierls models of one-dimensional molecular chains
Abstract. The Peierls models describe independent electrons in a deformable one-dimensional finite or infinite chain of atoms. The atoms are treated as classical objects and the electrons are described by a simplified version of quantum mechanics. This leads to a system of coupled, discrete, nonlinear and nonlocal equations. The solutions can be obtained as critical points of an energy functional. In 1987 Kennedy and Lieb studied finite chains and proved that if the number $N$ of nuclei is even, the energy has exactly two minimizers which are periodic of period 2, and are translates of one another by a translation of one unit in the lattice. We study rigorously the case of an odd number of atoms. We prove that if $N$ is odd and converges to infinity, the global minimizer of the energy converges to a "kink" soliton in the infinite chain. This soliton is asymptotic to one of the periodic minimizers found by Kennedy-Lieb in one direction of the chain, and to the other solution in the other direction. It minimizes a 'renormalized' energy. We also study the limit of strong interatomic forces in which the discrete model can be replaced by a continuous model involving the Dirac equation. This is joint work with Mauricio Garcia Arroyo.

Speaker 27: Jalal Shatah
NYU
Title. Resonances in PDE’s
Abstract. (later)

Speaker 28: Michael Struwe
ETH-Zurich
Title. The supercritical Lane-Emden equation and its gradient flow
Abstract. In joint work with Simon Blatt we establish Morrey estimates for solutions to the heat flow for the Lane-Emden equation $-\Delta u = u|u|^{p-2}$ in the supercritical regime when $p > \frac{2n}{n-2}$ and show the existence of partially regular tangent maps at blow-up.

Speaker 29: Gang Tian
Princeton
Title. Regularity of Ricci curvature equations
Abstract. In this talk, I will discuss some progress on the following regularity problem: What can we say about metrics with Ricci curvature bounded various norms? Those metrics involve Einstein metrics whose Ricci curvature is constant. I will also discuss some applications. This is an expository talk.

Speaker 30: Neil Trudinger
Canberra

Title.  Weak continuity of nonlinear operators

Abstract.  We are concerned with the weak continuity of nonlinear operators acting on associated classes of subharmonic functions. Such results enable us to extend the operators as measures on non-smooth functions and can be the basis for an ensuing potential theory. Particular classical examples are the real and complex Monge–V Ampère operators on convex and plurisubharmonic functions. The programme was initiated in collaboration with Xu-jia Wang in the late 1990s in the context of Hessian measures in Euclidean space, extending the Monge-Ampère' measure of Aleksandrov. In particular we will report on recent developments related to mean curvature measure, with Qui-yi Dai and Xu-jia Wang, and the discovery of a new measure on Heisenberg groups, with Wei Zhang.

Speaker 31:  Cedric Villani
IHP and Lyon
Title.  TBA
Abstract.  TBA

Speaker 32:  Claude Viterbo
ENS Paris
Title.  TBA
Abstract.  TBA
Campus Dining
at the University of British Columbia

From world-class catering to casual dining, coffee shops and internationally-inspired food outlets, UBC offers a delicious assortment of food services solutions. Here is an overview of food service providers certain to deliver a satisfying campus dining experience.

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Conference and special event catering
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Sage Bistro at University Centre
Casual fine dining available for breakfast, lunch and special events
www.sage.ubc.ca

The Point Grill at Marine Drive Residence
New upscale casual dining restaurant open for brunch, lunch, and dinner. Open M-F

Triple O’s at David Lam Research Centre
Casual dining in a family-friendly environment. Open daily

Residence Dining
Totem Park and Place Vanier Cafeterias
For information about group meal plans, please call 604-822-6204 or email rene.atkinson@ubc.ca

Pacific Spirit Place Cafeteria at the SUB
Student Union Building, 6138 Student Union Blvd
Pacific Spirit Place is open weekdays for breakfast and lunch. For information about group meal plans, please call 604-822-9310 or email fred.cheng@ubc.ca

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at the Student Union Building (SUB)

The SUB features a variety of food outlets all under one roof and conveniently located at the heart of campus. Get a delicious bagel or muffin to go, grab a slice of pizza at Pie R Squared, pick up some freshly made sushi or sit and enjoy a juicy beef burger at Pit Pub. The SUB has something for everyone!

Concourse and Sub-Level

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Montreal-style bagels, sandwiches, and bagel melts using high-quality ingredients and freshly squeezed vegetable or citrus juice!

The Delly
Fresh sandwiches made to order. A wide selection of salads, wraps, curries, soups and pasta made daily.

The Honour Roll
Maki rolls, nigiri, sushi, donburi rice bowls and bento boxes are made fresh throughout the day. Ask about party platters and catering.

The Pit Burger Bar
Charbroiled hamburger specials, veggie burgers, hot wings, beer-battered fish & chips and more!

The Pit Pub
Satellite big-screen sports, six high-definition TV’s, great drink prices, and a great atmosphere!

The Moon Noodle House
Great wonton soup, daily specials, fresh steamed veggies, combos and hot & sour soup.

The Patio BBQ
On the south side of the SUB, Monday to Friday (weather permitting) offering grilled 1/4 pound burgers, veggie burgers, smokies and drinks.

The Pendulum Restaurant
Delicious grilled sandwiches and paninis, and lots of vegetarian and vegan dishes!

Pie R Squared
Great house-made pizza slices, great prices, cold drinks. Now offering soft-serve ice cream and doughnuts.

www.catering.ubc.ca

NEED CATERING? For catered events or meals on the go, Wescadia Catering offers a multitude of menu ideas to meet a range of dietary needs. We pride ourselves on our knowledgeable, friendly staff, professional service and quality ingredients.
University Boulevard
Restaurants and Food Outlets

University Boulevard boasts a vibrant neighbourhood feel, and features dozens of places to enjoy a sit-down meal, people-watch over coffee, or grab a quick bite on the run. Visitors will feel right at home choosing from internationally-recognized franchises and unique offerings from local entrepreneurs.

The Boulevard Coffee Roasting Co.
at David Strang, 5870 University Blvd.
theboulevard.ca

Mahony & Sons Public House
at David Strang, 5990 University Blvd.
www.mahonyandsons.com

The Well Café
at Regent College, 5800 University Blvd.

University Village
5700 Block, University Blvd.

- Blenz Coffee Shop
- Booster Juice Juice & Snack Bar
- Mio Japan Japanese Fast Food
- McDonald’s Breakfast – Late-Night Fast Food
- Pearl Fever Tea House & Snack Bar
- Pita Pit Lunch – Late-Night Take-Out & Delivery
- One More Sushi Japanese Dining
- Only U Café Deli & Diner
- Starbuck’s Coffee Shop
- University Pizza Take-Out & Delivery
- Vera’s Burger Shack Diner
- Village Restaurant Chinese Dining

International Food Fair
University Marketplace, Lower Level

- A-1 Vietnamese Food Pho & Noodle House
- Curry Point East Indian
- Donair Town Persian, Mediterranean, Catering
- Leona Mediterranean Food Lebanese
- Malaysian Cuisine Malaysian, Thai
- Osaka Sushi Japanese
- Timpo Mongolian BBQ Stir-Fry
- Yi Kou Xiang Chinese

Also Recommended...
Westward Ho! Public House & Grill Room at the University Golf Club
www.universitygolf.com/dine