Pacific Institute *for the* Mathematical Sciences

NONLOCAL VARIATIONAL PROBLEMS AND PDEs

Program

June 13-17, 2016

The University of British Columbia
Earth Sciences Building (ESB)
2207 Main Mall, Vancouver

ORGANIZERS: Rustum Choksi (McGill), Michael Ward (UBC), Juncheng Wei (UBC)

Getting Started

Get connected: Select the "ubcvisitor" wireless network on your wireless device. Open up a web browser, and you will be directed to the login page.

FAQs

Q: Where do I check in on the first day?

Check- in and package pick up can be done in the Atrium.

Q: Where are the sessions?

- All plenary sessions will be in the **Earth Sciences Building Room 2012.**
- You will find a copy of the building floor on page 3 and a campus map at the end of the program.

Q: Will the program change?

Program changes and updates will be announced at each session.

Q: When should I wear my badge?

Please wear your name badges at all times on site so that PIMS Staff recognize you as a guest.

Q: Where can I go for help on site?

If you need assistance or have a question during the conference, please feel free to talk to one of the organizers.

Q: Where can I get refreshments and meals?

For snacks or quick meals, please view the list of UBC eateries attached at the end of the program. Coffee breaks are provided each day of the workshop and a hosted lunch provided on Monday and Thursday noon.

Q: Where can I get directions for campus and the building?

You will find a copy of the building floor on page 3 and a campus map at the end of the program.

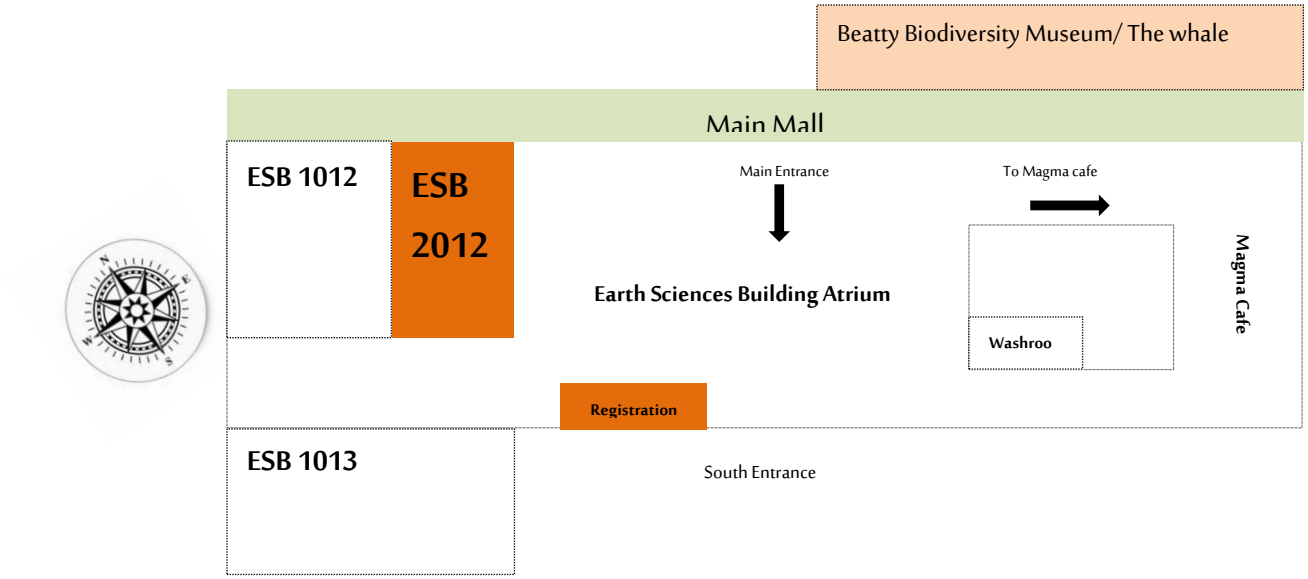
Q: Where can I get a cab to pick me up from the Venue?

You can call Yellow Cab (604-681-1111) and request to be picked up at the intersection of West Mall and Bio. Sciences Road. Use the south entrance and walk straight down to the intersection.

There will be photography throughout this event. PIMS' event photography is used across a variety of our communications platforms including web, print and electronic promotional materials. If, for any reason, you wish not to have your photo taken or used in this manner, please contact the event organizers.

Conference Room Guide:

All Sessions: ESB 2012



** Not drawn to scale. See detailed UBC map on the last page

General Travel Directions:

UBC Map link: http://www.maps.ubc.ca/PROD/images/pdf/ubcmap.pdf

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. Head 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.

Parking at UBC: http://www.parking.ubc.ca/visitor.html

Monday June 13, 2016

8:50am - 9:00am	Opening remarks and announcements.
9:00am - 10:00am	**Mini-course 1: Enrico Valdinoci, Weiertrass Institute:**
	Nonlocal equations from various perspectives
10:00am - 11:00am	**Mini-course 2*: Theodore Kolokolnikov, Dalhousie University**
	Nonlocal systems arising from local PDE's and related problems.*Unfortunately Martin Burger, who was scheduled to deliver a mini-course, is unable to attend. We are very grateful to Theodore Kolokolnikov for agreeing to replace Martin on such short notice and to give a mini course on Nonlocal systems arising from local PDE's and related problems.
11:00am - 11:20am	Coffee break (20 minutes)
11:20am - 12:10pm	**Qiang Du, Columbia University**:
	Localization of nonlocal continuum models
12:10pm - 2:00pm	Hosted Lunch: **Magma Café, see map on page 2;**
	Please show/have your name tag at this break
2:00pm - 2:50pm	**Ovidiu Savin, Columbia University**:
	Obstacle type problems for minimal surfaces
2:50pm - 3:40pm	**Cyrill Muratov, New Jersey Institute of Technology**:
	Low density phases in geometric and phase field models of uniformly charged liquids
3:40pm - 4:10pm	Coffee Break (30 minutes)
4:10pm - 5:00pm	**Monica Musso, Pontifical Catholic University of Chile:**
	A non-compactness result on the fractional Yamabe problem in large dimensions

Tuesday June 14, 2016

9:00am - 10:00am	**Mini-course 1: Enrico Valdinoci, Weiertrass Institute:**
	Nonlocal equations from various perspectives
10:00am - 11:00am	**Mini-course 2: Theodore Kolokolnikov, Dalhousie University**
	Nonlocal systems arising from local PDE's and related problems.
11:00am - 11:20am	Coffee break (20 minutes)
11:20am - 12:10pm	**Yannick Sire, Aix-Marseille University**:
	On the singular fractional Yamabe problem

12:10pm - 12:20pm	**Group photo outside meeting room/ near registration table**
12:20pm – 2:00pm	Lunch (See list of campus eateries beginning on page 14)
2-00pm - 2:50pm	**Xin Yang Lu, McGill University:**
	Average distance problem: new models and regularity of minimizers
2:50pm - 3:20pm	Coffee Break (30 minutes)
3:20pm - 4:10pm	**Xavier Ros-Oton, University of Texas at Austin**:
	Free boundary regularity in the parabolic fractional obstacle problem
5:30pm	Meet at the Alumni Centre and depart for group dinner.
	Kirin Restaurant; 555 W 12th Ave
	(please ensure that you have signed / paid for the dinner by Mon. June 13 at 2:10pm)

Wednesday June 15, 2016

9:00am - 10:00am	**Mini-course 1: Enrico Valdinoci, Weiertrass Institute:**
	Nonlocal equations from various perspectives
10:00am - 11:00am	**Mini-course 2: Theodore Kolokolnikov, Dalhousie University**
	Nonlocal systems arising from local PDE's and related problems.
11:00am - 11:20am	Coffee break (20 minutes)
11:20am - 12:10pm	**Ihsan Topaloglu, McMaster University**:
	Nonlocal energies defined via attractive-repulsive interaction potentials
12:10pm - 1:00pm	**Katy Craig, UCLA:**
	From slow diffusion to a hard height constraint: characterizing congested aggregation

Thursday June 16, 2016

9:00am - 9:50am	**Anthony Pierce, University of British Columbia**:
	Modeling multi-scale processes in hydraulic fracture propagation
9:50am - 10:40am	**Antoinne Mellet, University of Maryland**:
	A higher order free boundary problem for hydraulic fractures
10:40am - 11:10am	Coffee break (30 minutes)

11:10am - 12:00pm	**David Bourne, Durham University**:
	Particle systems with Wasserstein Interaction: Analytical and Numerical Results
12:00pm - 12:50pm	**Razvan Fetecau, Simon Fraser University:**
	First-order aggregation models and zero inertia limits
12:50pm - 3:00pm	Hosted Lunch: **Magma Café, see map on page 2;**
	Please show/have your name tag at this break
3:00pm - 3:50pm	**Xiaofeng Ren, George Washington University:**
	Bubbles and droplets in a singular limit of the FitzHugh-Nagumo system
3:50 pm - 4:20pm	Coffee break (30 minutes)
4:20pm - 5:10pm	**Eliot Fried, Okinawa Institute of Science and Technology**:
	Solution of the Kirchhoff–Plateau problem

Friday June 17, 2016

9:00 am – 9:50 am	**Weiwei Ao, University of British Columbia**:
	Existence of positive solutions with a prescribed singular set of fractional Yamabe Problem
9:50 am – 10:40 am	**Laurent Betermin, University of Heidelberg:**
	Asymptotic expansion of logarithmic energy on the unit sphere
10:40 am – 11:10 am	Coffee break (30 minutes)
11:10am – 12:00 pm	**Riccardo Cristoferi, Carnegie Mellon University:**
	An isoperimetric problem with nonlocal repulsive interaction
12:00pm – 12:15 pm	**Closing remarks from the organizers and Conference Evaluation Survey**:
	Participants of this event are required to fill in the online event evaluation survey available online at https://goo.gl/hU1qjl .

Titles and Abstracts: Mini-courses

Theodore Kolokolnikov, Dalhousie University

Nonlocal systems arising from local PDE's and related problems.

Many important PDE models have solutions that consist of localized structures that interact in a nonlocal way. A prominent example is the Gross-Pitaevskii equation used to model Bose-Einstein condensates and whose solutions consist of vortex-like structures. A wide class of reaction diffusion systems, such as Grey-Scott or Schnakenberg models, also admit solutions consisting of interacting spikes. In an appropriate limit, the interaction of these localized structures naturally leads to a nonlocal problem. In this mini-course we present some of the novel nonlocal models that arise in this way, and show how their analysis gives new insights into the original PDE models.

Enrico Valdinoci, Weiertrass Institute

Nonlocal equations from various perspectives

We would like to give a detailed presentation of some equations which exhibit some nonlocal phenomena. Often, the nonlocal effect is modeled by a diffusive operator which is (in some sense) elliptic and fractional. Natural examples arise from probability, geometry, quantum physics, phase transition theory and crystal dislocation dynamics. We will try to discuss some of the mathematical tools that are useful to deal with these problems, explain in detail some of the main motivations, describe some recent results on these topics and list some open problems.

Titles and Abstracts: Regular Talks

Weiwei Ao, University of British Columbia

Existence of positive solutions with a prescribed singular set of fractional Yamabe Problem

We consider the problem of the existence of positive solutions with prescribed isolated singularities of the fractional Yamabe problem. Near each singular point, these solutions are approximated by the Delaunay-type singular solution which has been studied recently by De la Torre, Del Pino, Mar Gonzalez and J.C. Wei. Away from the singular points, these solutions are approximated by the summation of the Green's function. This result is the analogous result for the classical Yamabe problem studied by Mazzeo and Pacard (1999). This is a joint work with De la Torre, Mar Gonzalez and J.C. Wei.

Laurent Betermin, University of Heidelberg

Asymptotic expansion of logarithmic energy on the unit sphere

To understand the asymptotic expansion of minimal logarithmic energy on the unit sphere is currently a great challenge (Smale 7th problem). In this talk, we will explain how a Gamma-Convergence method of Sandier-Serfaty connected with recent results in Logarithmic Potential Theory about equilibrium measures with unbounded support allows us to prove the existence of the famous next-order term. Moreover, we will show that the conjecture of Brauchart-Hardin-Saff about the value of this coefficient and the conjecture about the global minimality of the triangular lattice for a Coulombian "renormalized energy" defined by Sandier and Serfaty are equivalent. This is a joint work with E. Sandier.

David Bourne, Durham University

Particle Systems with Wasserstein Interaction: Analytical and Numerical Results

In this talk I will discuss a class of nonlocal particle systems that arise in economics (optimal location problems and urban planning), electrical engineering (quantization and image processing), and materials science (crystallization and pattern formation). These energies can be formulated either in terms of atomic measures and Wasserstein distances or in terms of generalised Voronoi diagrams. For a specific example of such an energy, namely an idealised model of block copolymers, I will present a rigorous crystallization result about the optimality of the triangular lattice. For the broader class of energies I will present a numerical method, which is a generalisation of Lloyd's algorithm for computing centroidal Voronoi tessellations. This is joint work with Mark Peletier, Steven Roper, and Florian Theil.

Katy Craig, UCLA

From slow diffusion to a hard height constraint: characterizing congested aggregation

For a range of physical and biological processes—from dynamics of granular media to biological swarming—the evolution of a large number of interacting agents is modeled according to the competing effects of pairwise attraction and (possibly degenerate) diffusion. In the slow diffusion limit, the degenerate diffusion formally becomes a hard height constraint on the density of the population, as arises in models of pedestrian crown motion.

Motivated by these applications, we bring together new results on the Wasserstein gradient flow of nonconvex energies with the theory of free boundaries to study a model of Coulomb interaction with a hard height constraint. Our analysis demonstrates the utility of Wasserstein gradient flow as a tool to construct and approximate solutions, alongside the strength of viscosity solution theory in examining their precise dynamics. By combining these two perspectives, we are able to prove quantitative estimates on convergence to equilibrium, which relates to recent work on asymptotic behavior of the Keller-Segel equation. This is joint work with Inwon Kim and Yao Yao.

Riccardo Cristoferi, Carnegie Mellon University:

An isoperimetric problem with nonlocal repulsive interaction

We consider an energy introduced by Choksi and Peletier as the Gamma-limit of the Ohta-Kawasaki energy for diblock copolymer, when one phase is predominant with respect to the other. The peculiarity of the minimization problem is the competition between a local term, the perimeter, and a nonlocal one, given by a Riesz potential. The former favors phase separation along sharp interfaces, while the latter drives the system towards scattered configurations. This makes the minimization non trivial. We study properties of local and global minimizers in several regimes. This is a joint work with Marco Bonacini.

Qiang Du, Columbia University:

Localization of nonlocal continuum models

Recent development of nonlocal vector calculus and nonlocal calculus of variations provides a systematic mathematical framework for the analysis of nonlocal continuum models in the form of partial-integral equations. In this lecture, we consider the localization of some nonlocal models and associated nonlocal function spaces in order to study connections with traditional local models given by partial differential equations and Sobolev spaces. In particular, we present some recent results on heterogeneous localization, including an extension of classical trace theorems to nonlocal spaces of functions with significantly weaker regularity. We also discuss their implications in nonlocal modeling and simulations of various anomalous processes.

Razvan Fetecau, Simon Fraser University

First-order aggregation models and zero inertia limits

We consider a first-order aggregation model in both discrete and continuum formulations and show how it can be obtained as zero inertia limits of second-order models. The limiting procedure becomes particularly important when one considers anisotropy in the first-order discrete model, as in that case the model becomes {\em implicit}, and issues such as non-uniqueness and jump discontinuities are being brought up. To extend solutions beyond breakdown we propose a relaxation system containing a small parameter ϵ, which can be interpreted as a small amount of inertia or response time. We show that the limit $\epsilon \to 0$ can be used as a jump criterion to select the physically correct velocities. In the continuum setting, the procedure consists in a macroscopic limit, enabling the passage from a kinetic model for aggregation to an evolution equation for the macroscopic density. This is joint work with Joep Evers, Lenya Ryzhik and Weiran Sun.

Eliot Fried, Okinawa Institute of Science and Technology

Solution of the Kirchhoff–Plateau problem

The Kirchhoff–Plateau problem concerns the equilibrium shapes of a system in which a flexible filament in the form of a closed loop is spanned by a soap film, with the filament being modeled as a Kirchhoff rod and the action of the spanning surface being solely due to surface tension. We establish the existence of an equilibrium shape that minimizes the total potential energy of the system under the physical constraint of non-interpenetration of matter, but allowing for self-contact of the filament. In our treatment, the bounding filament retains a finite thickness and a nonvanishing volume, while the soap film is represented by a set with finite two-dimensional Hausdorff measure. Moreover, the region where the soap film touches the surface of the filament is not prescribed a priori. This is joint work with Giulio Giusteri and Luca Lussardi.

Xin Yang Lu, McGill University

Average distance problem: new models and regularity of minimizers

The average distance problem, $\min_X \int \text{dist}(x,X)dx $$, has been widely used in mathematical modeling of optimization problems, such as urban planning, fare structure optimization, and data analysis. Regularity of minimizers is a delicate problem: it is known that Lipschitz regularity holds, while C^1 is false in general. For many application, the original version of the average distance problem exhibits several drawbacks, thus additional penalization terms (e.g. Willmore energy, L^2 norm on the density, perimeter-to-area ratio, etc.) should be considered. In this talk we will present some recently introduced models, with results on the regularity of minimizers.

Antoinne Mellet, University of Maryland

A higher order free boundary problem for hydraulic fractures

We will discuss the properties of a free boundary problem which has been proposed to model the propagation of hydraulic fractures. The problem involves a third order non-local parabolic equation which can be seen as an interpolation between the porous media equation and the thin film equation. We will discuss the well-posedness of the problem and prove the existence of self-similar solutions.

Monica Musso, Pontifical Catholic University of Chile

A non-compactness result on the fractional Yamabe problem in large dimensions

Let (X^{n+1}, g^+) be an $(n+1)$-dimensional asymptotically hyperbolic manifold with a conformal infinity $(M^n, [h])$. The fractional Yamabe problem addresses to solve

\[P^{\gamma}[g^+,h] (u) = cu^{n+2\gamma \over n-2\gamma}, \quad u > 0 \quad \text{on } M\]

where $c \in \mathbb{R}$ and $P^{\gamma}[g^+,h]$ is the fractional conformal Laplacian whose principal symbol is $(-\Delta)^{\gamma}$. In this paper, we construct a metric on the half space $X = \mathbb{R}^{n+1}_+$, which is conformally equivalent to the unit ball, for which the solution set of the fractional Yamabe equation is non-compact

provided that $n \ge 24$ for $\gamma \in (0, \gamma^*)$ and $n \ge 25$ for $\gamma \in [\gamma^*,1)$ where $\gamma^* \in (0, 1)$ is a certain transition exponent. The value of γ^* turns out to be approximately 0.940197. This is a joint work with Seunghyeok Kim and Juncheng Wei.

Cyrill Muratov, New Jersey Institute of Technology

Low density phases in geometric and phase field models of uniformly charged liquids

This talk is concerned with the macroscopic behavior of global energy minimizers in the three-dimensional Ohta-Kawasaki model of diblock copolymer melts. The model represents a paradigm for energy-driven pattern forming systems in which spatial order arises as a result of the competition of short-range attractive and long-range repulsive forces. We are interested in the large volume behavior of minimizers in the low volume fraction regime, in which one expects the formation of a periodic lattice of small droplets of the minority phase in a sea of the majority phase. Under periodic boundary conditions, we prove that the considered energy Γ-converges to an energy functional of the limit "homogenized" measure associated with the minority phase consisting of a local linear term and a non-local quadratic term mediated by a screened Coulomb kernel and exhibiting a transition from trivial to non- trivial minimizers. Asymptotically, the mass of the minority phase in a non-trivial minimizer spreads evenly across the domain. For the minimizers of the associated geometric variational problem, we also prove that the energy density distributes uniformly across the domain as well, and that minimizers appear as a uniformly distributed array of droplets, most of which minimize the energy density for the volume constrained whole space problem. This is joint work with H. Knuepfer and M. Novaga.

Anthony Pierce, University of British Columbia

Modeling multi-scale processes in hydraulic fracture propagation

Hydraulic fractures (HF) are tensile cracks that propagate in pre-stressed solid media due, to the injection of a viscous fluid. Hydraulic fracturing has become the focus of considerable public attention as new technology to develop multiple hydraulic fractures from deep horizontal wells has enabled the extraction of hydrocarbons from impermeable shale deposits. In this talk I provide examples of natural HF and situations in which HF are used in industrial problems. Natural examples of HF include the formation of dykes by the intrusion of pressurized magma from deep chambers. They are also used in a multiplicity of engineering applications, including: the deliberate formation of fracture surfaces in granite quarries; waste disposal; remediation of contaminated soils; cave inducement in mining; and, as mentioned above, the fracturing of hydrocarbon bearing rocks in order to enhance productivity of oil and gas wells. Novel and emerging applications of this technology include CO2 sequestration and the enhancement of fracture networks to capture geothermal energy.

I will show how dimensional reasoning can be used to identify the fundamental power-law relationships between the variables depending on the balance between the dominant physical processes that are active. I will describe the governing equations in 1-2D (1

dimensional fluid flow and 2 dimensional elasticity) as well as 2-3D models of HF, which involve a coupled system of degenerate nonlinear integro-partial differential equations as well as a free boundary. We demonstrate that a re-scaling of these models and dominant balance arguments can be used to identify special asymptotic solutions that are of crucial importance in the location of the fracture free boundary. I will discuss recent results in which a novel approximate solution of the connection problem involving a steadily moving semi-infinite HF can be used to derive efficient algorithms to model the multi-scale processes involved in the propagation of an arbitrarily shaped planar HF. I discuss the challenges for efficient and robust numerical modeling of the 2-3D HF problem and some techniques recently developed to resolve these problems. The efficacy of these techniques is demonstrated by comparing numerical results to analytic solutions for simple geometries and with laboratory experiments.

Xiaofeng Ren, George Washington University

Bubbles and droplets in a singular limit of the FitzHugh-Nagumo system

The FitzHugh-Nagumo system is a classical activator-inhibitor type reaction-diffusion system, originally proposed to model excitable neurons. In one parameter range, the system is reduced, via the Gamma convergence theory, to a inhibitory geometric problem. We first study this geometric problem on the entire plane for disc solutions, called bubbles. In two space dimensions, depending on the two parameters of the problem, one may have zero, one, two, or even three bubbles. Some of these bubbles are stable while others are unstable. In dimenions three and higher the three bubble phenomenon does not occur. Next we build assemblies of perturbed small discs, termed droplets, as stable stationary points of the geometric problem on a bounded domain. This is joint work with Chao-Nien Chen, Yung-Sze Choi, and Yeyao Hu.

Xavier Ros-Oton, University of Texas at Austin

Free boundary regularity in the parabolic fractional obstacle problem

We study the regularity of the free boundary in the parabolic obstacle problem for the fractional Laplacian. This problem arises in American option models when the assets prices are driven by pure jump L\'evy processes.

Our main result establishes that, when $s>\frac12$, the free boundary is a $C^{1,\alpha}$ graph in x and t near any regular free boundary point $(x_0,t_0)\in \partial\{u>\varphi\}$. Furthermore, we also prove that solutions u are C^{1+s} in x and t near regular points, with a precise expansion at all such points.

Ovidiu Savin, Columbia University

Obstacle type problems for minimal surfaces

We describe certain obstacle type problems involving a standard and a nonlocal minimal surface. We discuss optimal regularity of the solution and a characterization of the free boundary. This is joint work with L. Caffarelli and D. De Silva.

Yannick Sire, Aix-Marseille University

On the singular fractional Yamabe problem

After introducing the regular fractional Yamabe problem, I will go on developing results on a singular version of it. I will concentrate on recent results on conformally flat metrics dealing with solutions of the critical equation exhibiting isolated singularities or more generally being singular along a set of zero capacity.

Ihsan Topaloglu, McMaster University

Nonlocal energies defined via attractive-repulsive interaction potentials

A variety of physical and biological interaction -- from self-assembly of nano particles to collective behavior of many-agent systems such as biological swarming -- can be modeled via a nonlocal energy. Depending on the choice of the interaction kernel, the asymptotic states of these physical and biological systems can be characterized as minimizers of such energies via a gradient flow connection.

In this talk, first, I will present on how regularization of singular attractive-repulsive kernels allows us to restore convexity and differentiability; hence enables us to understand the minimizers and the gradient flows of these energies (joint work with K. Craig). Next, I will consider the minimization of these energies over sets. I will discuss the additional challenges this nonlocal shape optimization problem poses and establish the existence/nonexistence of minimizers on certain parameter regimes. This is a joint work with A. Burchard and R. Choksi.

On-Campus Dining
at the University of British Columbia

Student Union Building (1)

Subway Mon – Fri 7:30am-2pm

Starbucks Mon – Fri 7:30am-6pm, Sat 8:30am-3pm

University Village (2)

University Village has many take out and dine in options; diner-style breakfasts, coffee shops, pizza by the slice, bubble tea, a full-service sushi restaurant, a small grocer selling fresh produce and assorted goods, as well as an international food court

Blenz Coffee	Booster Juice	Mio Japan	Granville Island Produce
McDonalds	Pearl Fever Tea House	FreshSlice Pizza	One More Sushi
Only U Café	Starbucks	Pita Pit	Vera's Burger Shack
Subway	Red Burrito	Well Tea	5 Tastes Chinese Bistro
Suga Sushi Japanese	Oven Fresh Bakery	A&W	International Food Court

Wesbrook Village (3)

Wesbrook Village, located on south campus, offers shops, services and homes within a quaint, pedestrian-friendly setting, with access to Pacific Spirit Park and all the amenities of the UBC campus.

Save-On-Foods
Large grocery store with a deli and small café

Chef Hung Taiwanese Beef Noodle
Noodles, soups, rice dishes, and sides

Jugo Juice
Fresh fruit smoothies

BierCraft
Craft pub with a French-inspired Bistro menu.

Menchie's Frozen Yogurt
Frozen yogurt and sorbet bar

Togo Sushi
Fresh sushi made to order

Blenz
Coffee shop

Doughgirls Comfort Kitchen + Bakeshop
Fresh made bread and pastries.

m.ubc.ca

UBC Campus Food Trucks

Hungry Nomad
The original UBC food truck!

Roaming Bowl
Fresh made Asian noodle and rice bowls

The Dog House
The home of the West Coast hot dog

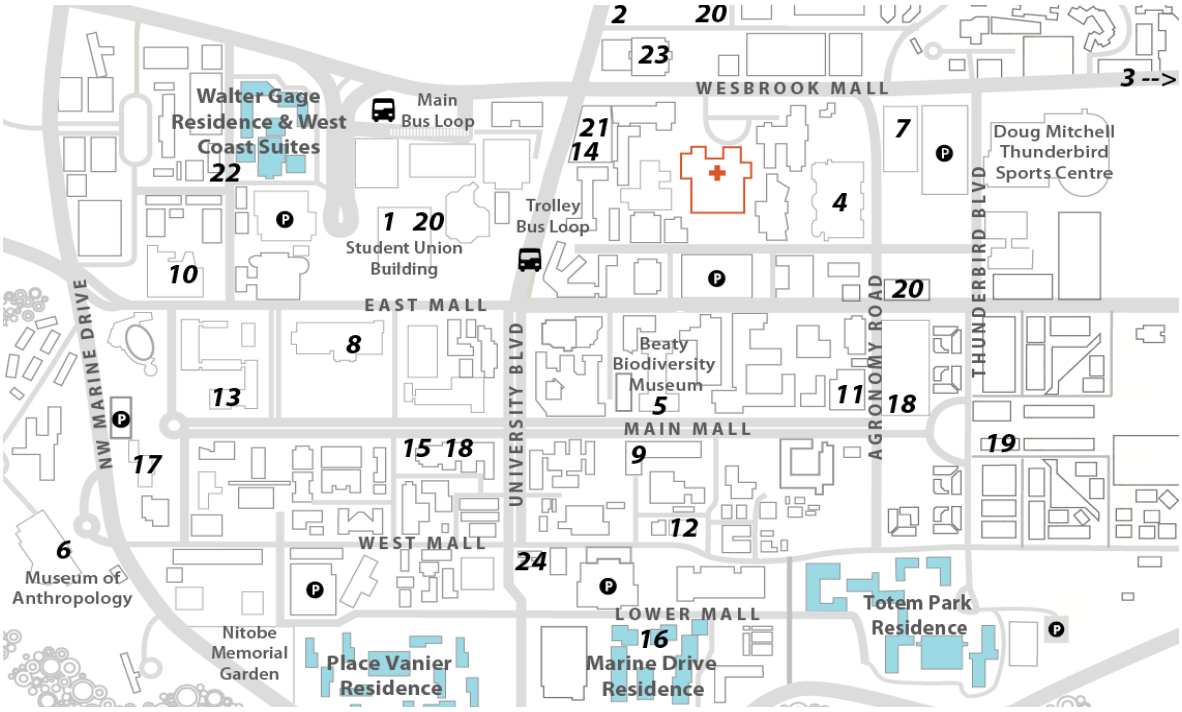
The Nest

The Nest, located on the new University Square beside the Student Union Building, will offer AMS owned and operated restaurants and shops for the summer of 2015!

Perch
Uppercase
Pier^2 Pizza
Flip Side
Qoola Frozen Yogurt Bar
Peko Sushi
Palate
The Pit
Grand Noodle Emporium
The Delly

On-Campus Dining

at the University of British Columbia



Full-Service Restaurants

Mahoney & Sons Public House (14)
Irish-style pub serving salads, appetizers, pizzas, and a sampling of classic pub fare

The Point Grill (16)
Burgers and sandwiches, salads, local seafood, and an outdoor patio to enjoy the sun

Triple O's (15)
Dine in or take out - breakfast sandwiches, beef, chicken, and veggie burgers, and milkshakes

Sage (17)
Healthy, modern West Coast cuisine paired with breathtaking views.

Mercante (24)
Authentic Cucina Italiana, stone oven Italian pizza, salads, pasta, soups and desserts

Coffee Shops

Tim Hortons (18)
Bean Around the World (19)

Starbucks (20)
The Boulevard Coffee Roasting Co (21)

Great Dane Coffee (22)
The Well Café (23)

Quick-Service Cafés

These cafés, located in convenient spots across campus, offer a range of snacks and lunch items, including soups, sandwiches, salads, and a variety of hot dishes

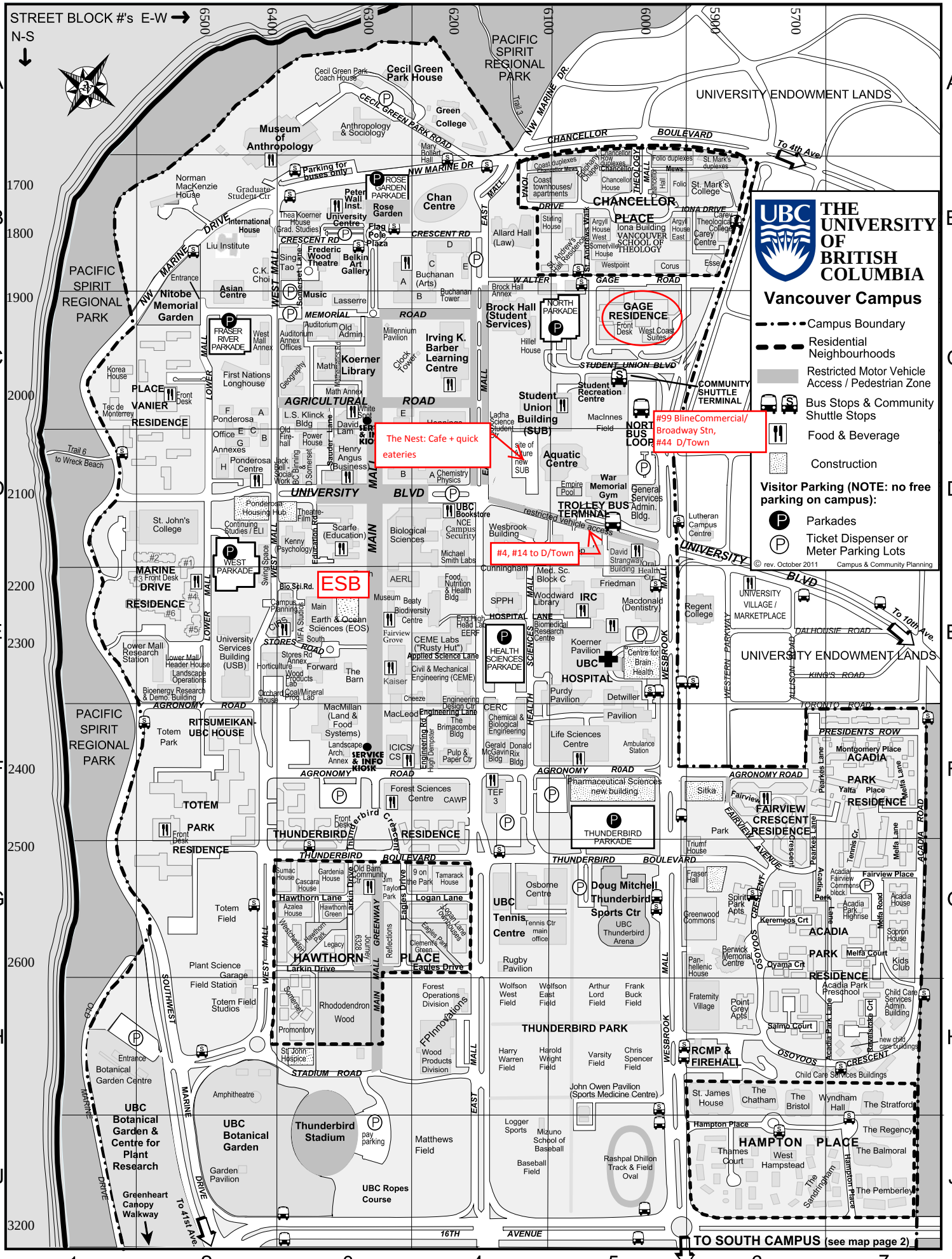
Caffe Perugia (4)
Niche Café (5)

Café MOA (6)
Pharmacy Café (7)

Ike's Café (8)
Magma Café (9)

Law Café (10)
Reboot Café (11)

The Loop Café (12)
Stir It Up Café (13)


STREET BLOCK #'s E-W
N-S
THE UNIVERSITY OF BRITISH COLUMBIA
Vancouver Campus
Campus Boundary
Residential Neighbourhoods
Restricted Motor Vehicle Access / Pedestrian Zone
Bus Stops & Community Shuttle Stops
Food & Beverage
Construction
Visitor Parking (NOTE: no free parking on campus):
Parkades
Ticket Dispenser or Meter Parking Lots
© rev. October 2011 Campus & Community Planning
The Nest: Cafe + quick eateries
#99 BlineCommercial/ Broadway Stn, #44 D/Town
#4, #14 to D/Town
ESB
UNIVERSITY ENDOWMENT LANDS
PACIFIC SPIRIT REGIONAL PARK
CHANCELLOR BOULEVARD
NW MARINE DR
UNIVERSITY BLVD
AGRONOMY ROAD
STUDENT UNION BLVD
THUNDERBIRD BOULEVARD
STADIUM ROAD
16TH AVENUE
TO SOUTH CAMPUS (see map page 2)

Map Directory

SOUTH CAMPUS MAP

Campus & Community Planning
www.planning.ubc.ca

Note:
Local traffic only along Wesbrook Mall on South Campus

Map Information

Need help finding your way on campus? Call the Campus & Community Planning MapInfo Line at 604-827-5040, M-F, 8:30-4:30

Or use the online searchable colour map at www.maps.ubc.ca