

# A Seminar on Geometric Measure Theory, Varifolds, and Their Applications

Portland State University  
Portland, Oregon  
Room Location: TBA

July 9-12, 2018

“Tentative” Schedule

Ulrich Menne (U.M.) and Sławomir Kolasiński (S.K.) will visit from the University of Leipzig and the University of Warsaw, respectively, to teach a three-day short course in the areas of geometric measure theory (GMT) and varifolds (generalized submanifolds) aimed at analysis students and others interested in geometric analysis on varifolds. Following this will be a fourth day featuring 6-8 talks on applications in GMT, such as the simplicial multi-scale flat norm, computational approaches to varifolds, and branched optimal transport. This course is well suited to students and faculty interested in analysis, differential geometry, variational analysis, and their applications.

## Monday, July 9

9:00 a.m.    Rectifiable Sets and the Area & Coarea Formulas S.K.  
10:30 a.m.    Break  
11:00 a.m.    Sets of Finite Perimeter S.K.  
12:30 p.m.    Lunch  
2:30 p.m.    Varifolds S.K.  
4:00 p.m.    Break  
4:30 p.m.    Locally Lipschitz Functions on Rectifiable Varifolds S.K.  
6:00 p.m.    Wrap-up

## Tuesday, July 10

9:00 a.m.    First Variation of a Varifold S.K.  
10:30 a.m.    Break  
11:00 a.m.    Monotonicity Identity S.K.  
12:30 p.m.    Lunch  
2:30 p.m.    Isoperimetric Inequality & Sets of Finite Perimeter on Varifolds U.M.  
4:00 p.m.    Break  
4:30 p.m.    Weakly Differentiable Functions on Varifolds I U.M.  
6:00 p.m.    Wrap-up

## Wednesday, July 11

9:00 a.m.	<a href="#">Weakly Differentiable Functions on Varifolds II</a> U.M.
10:30 a.m.	Break
11:00 a.m.	<a href="#">Sobolev Functions on Varifolds</a> U.M.
12:30 p.m.	Lunch
2:30 p.m.	<a href="#">Second-order Elliptic PDEs on Varifolds I</a> U.M.
4:00 p.m.	Break
4:30 p.m.	<a href="#">Second-order Elliptic PDEs on Varifolds II</a> U.M.
6:00 p.m.	Wrap-up

## Thursday, July 12

9:00 a.m.	<a href="#">Branched Optimal Transport in the Placenta</a> Qinglan Xia
9:45 a.m.	<a href="#">Flows for Branched Optimal Transport</a> Carol Downes
10:30 a.m.	Break
11:00 a.m.	<a href="#">Computing Integral Currents</a> Sharif Ibrahim
11:45 a.m.	<a href="#">Median Shapes</a> Yufeng Hu
12:30 p.m.	Lunch
2:30 p.m.	<a href="#">Properties of Total Variation Minimizers</a> William K. Allard*
3:15 a.m.	<a href="#">Branched Optimal Transport</a> Robert Hardt*
4:00 p.m.	Break
4:30 p.m.	<a href="#">Functional Shapes</a> Nicolas Charon*
5:15 a.m.	<a href="#">A Varifold Approach to Surface Reconstruction</a> Blanche Buet*
6:00 p.m.	Wrap-up

Organizing Committee:

**Enrique Alvarado**, Chair, Washington State University–Pullman

**Laramie Paxton**, Co-chair\*\*, Washington State University–Pullman

**Benjamin Parker**, Portland State University

**Kevin R. Vixie**, Washington State University–Pullman

**Bala Krishnamoorthy**, Washington State University–Vancouver

**There is no registration fee for the seminar.** \*\*Please contact Laramie Paxton at [realtimemath@gmail.com](mailto:realtimemath@gmail.com) for assistance with travel arrangements or general questions. The following will be provided during the talks: tea, coffee, sugar, milk, and almond milk. See [www.analysisplusdata.community](http://www.analysisplusdata.community) for more information.

\*Tentative