PRESIDENTIAL DREAM COURSE

PUBLIC LECTURE

Numerical Computation on Curved Surfaces

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Tuesday, August 28, 5-6 pm

Physical Sciences Building Room 201

Abstract: Despite the appearance sometimes given in textbooks, not all differential equations are posed on straight lines and rectangles. This talk will introduce some easy-to-use techniques for computing numerical solutions to partial differential equations posed on curved surfaces and other general domains. One application is modelling animal coat pattern formation using reaction-diffusion equations. We'll also look at some other examples such as curve evolution, bulk-surface coupling, point clouds, visual effects, image processing, and mesh generation. A brief software demo will show how you can apply these techniques to your own problems.

Bio: Colin Macdonald works on numerical analysis and scientific computing. Colin completed his PhD in 2008 with Steve Ruuth (SFU), then started a postdoc with Stan Osher (UCLA), before becoming an Instructor at Oxford in 2009. He returned to Canada in 2015, and is currently an associate professor at the University of British Columbia. Colin has a second-place Leslie Fox prize in numerical analysis from 2009 and was the 2010 recipient of the SIAM Richard C. DiPrima prize in applied mathematics.

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