

**Bay Area Differential Geometry Seminar**  
**Saturday, December 3, 2016**  
**Stanford University**  
**Department of Mathematics, Fourth Floor**

*The seminar will take place from 10AM to 5PM on Saturday, February 6, 2016. Participants and their significant others are invited to a dinner to be arranged at a local restaurant on Saturday evening. The cost of the dinner will be reduced for students and postdocs. Details will be forthcoming on the signup page for the dinner (which you can access by this link: [signup list](#)).*

*Directions to the Stanford Mathematics Department are available on the department website. Parking on the campus is plentiful and unrestricted on weekends.*

- 10:00–11:00 **Reception, Morning Coffee**

- 11:00–12:00 **Jonathan Luk, Stanford University:** *Recent progress on the strong cosmic censorship conjecture in general relativity.*

I will discuss some recent progress on Penrose's celebrated strong cosmic censorship conjecture for the Einstein equations. In particular, we will discuss the conjecture for solutions in a neighborhood of the Reissner-Nordstrom and Kerr spacetimes, which according to the conjecture have unstable Cauchy horizons. This will be a survey talk in which I will begin with the physical motivations. Some of the results in the talk are obtained in joint works with Dafermos, Oh and Sbierski.

- 12:00–2:00 **Lunch**

*There are several places on the Stanford campus that serve lunch. In addition, downtown Palo Alto is a 5-minute drive or a 20-minute walk. There will be a brief organizational meeting at 1:45.*

- 2:00–3:00 **Dominique Hulin, Université Paris-Sud XI :** *Harmonic quasi-isometric maps.*

We will see that a quasi-isometric map between two pinched Hadamard manifolds is always within bounded distance of a unique harmonic map. This is a joint work with Yves Benoist.

- 3:00–4:00 **Afternoon Tea-Coffee**

- 4:00–5:00 **John Sullivan, Technische Universität Berlin:** *Geometric Knot Theory.*

Geometric knot theory studies how geometric properties of space curves relate to their topological knot type. One of the earliest results is the Fáry/Milnor theorem relating total curvature to bridge number. Recent work has been partly motivated by applications to the shapes of knotted polymers like DNA molecules. One interesting problem with some surprising answers asks for the shapes of knots and links tied tight in rope of fixed thickness. We will consider this ropelength problem, a variant of it for ribbons around knot diagrams, as well as Gromov's notion of distortion for knots.

- 6:00 **Dinner** *(Please sign up using the link [signup list](#) at the top of this announcement.)*