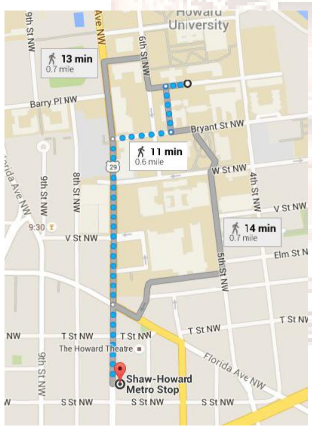
Locations and Directions

Auditorium
The seminar will take place in the Auditorium of the Biology Department (Ernest E. Just Hall) of Howard University, Room 203. The address of the building is 415 College St. NW, Washington DC. In the campus map (http://www.howard.edu/explore/map/HowardMap_150107.jpg) Biology Department is number 7.

Lunch
Lunch will be server in Carnegie Hall, building number 12 in the campus map.

Parking
There is a University parkig lot right next to the Biology building, it is freely available for parking on Saturday. Other parking is available on all streets nearby campus, including College St., but mostly with parkimeter.

Walking from metro
You can reach the Biology Building with a 10 minutes walk from the Shaw Metro Station (Yellow and Green line):



Baltimore-Washington Metro Area Differential Geometry Seminar

Howard University

Saturday October 24th, 2015

Ernest E. Just Building

Auditorium, first floor (Room G-09A)

Homepage:

`http://math.jhu.edu/~bernstein/MDGS/`

Organizers:

Howard University	Johns Hopkins University	University of Maryland
Roberto De Leo	Jacob Bernstein	Hans-Joachim Hein
Stanley Einstein-Matthews	Yi Wang	Yanir Rubinstein

Program

Reception and light breakfast	10:00–10:45am		
Welcome	10:45–11:00am	**Bernard Muir**, Dean of the CoAS.	
Lecture 1	11:00–12:00pm	**Gang Tian**	*K-stability implies CM-stability*
Lunch	12:00– 1:30pm	Carnegie Building, first floor	
Lecture 2	1:30– 2:30pm	**Robert Bryant**	*Curvature-Homogenous Metrics in Dimension 3*
Break	2:30– 3:00pm		
Lecture 3	3:00– 4:00pm	**Karsten Grove**	*Special Symmetry Groups in Non-Negative Curvature*

Abstracts

Robert Bryant (Duke University)

Curvature-Homogenous Metrics in Dimension 3

A Riemannian manifold (M, g) *is said to be Curvature-homogeneous if it is homogeneous to second order, i.e., if, for any two points in* M *the Riemannian tensors are equivalent under some isometry of the two tangent spaces. Of course, a locally homogeneous metric is curvature-homogeneous, but the converse is not true in dimensions greater than* 2*. (For a surface (i.e in dimension* 2*) curvature-homogeneity is equivalent to having constant Gaussian curvature, and such metrics are, of course, all classified locally and they are locally homogeneous.) Already in dimension* 3*, there are many questions about the existence and generality of curvature homogeneous metrics, even locally. In this case, curvature-homogeneity is equivalent to having the eigenvalues of the Ricci curvature be constant, which is a system of partial differential equations on the metrics.*

In the talk, I will review what is known about such metrics in dimension 3*, particularly the work of O.Kowalski and his collaborators during the 1990s. I will show that, for certain values of the eigenvalues of the Ricci tensor, these partial differential equations are integrable by the Darboux' method, which yields some surprising relations with classical subjects, such as the theory of holomorphic curves in the complex projective plane.*

Karsten Grove (University of Notre Dame)

Special Symmetry Groups in Non-Negative Curvature

All explicitly known examples of manifolds with positive or nonnegative curvature have come about via constructions involving symmetry. In this talk we will confine our discussion to so-called polar actions (actions with a section) and actions by reflection groups. We will present strong classification and structure theorems in this context.

Gang Tian (Princeton University)

K-stability implies CM-stability

Both K-stability and CM-stability were first introduced on Fano manifolds in 90s and generalized to any polarized projective manifolds. In this talk, I will show how the K-stable implies CM-stable. I will also discuss their relation to Geometric Invariant Theory and the problem on existence of constant scalar curvature Kahler metrics.