DIFFERENTIAL GEOMETRY/PDE SEMINAR

Wednesday, February 23
Padelford C-36
3:45 pm

New gluing theorems for positive constant scalar curvature manifolds

Andrew Byde
(Stanford University)

We prove 'connect sum' type theorems for constant positive scalar curvature manifolds and infinite 'Delaunay'-type manifolds, using a Cauchy data matching argument. Metrics on each piece are varied within their conformal class; finding CSC metrics then becomes a non-linear boundary value PDE for the conformal factor, where the 'boundaries' are the surfaces to be glued. Careful scaling estimates show that for small enough gluing surfaces, matching Cauchy data exists on both pieces.

These techniques are used to construct new types of CSC metrics with isolated point singularities on general manifolds and on domains with boundary, as well as closely related incomplete metrics which vanish on the boundaries of very small balls.