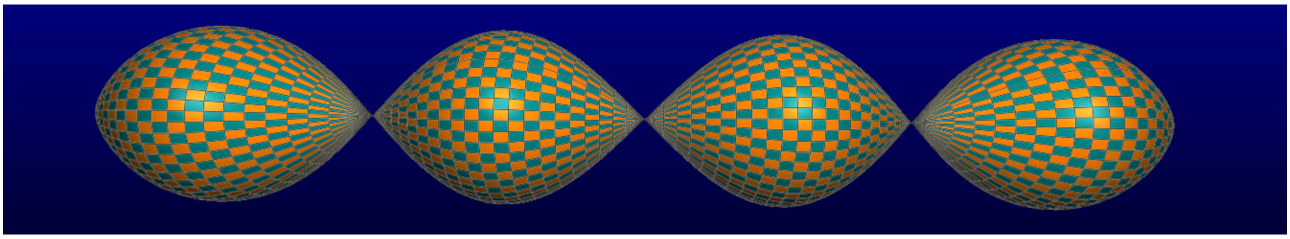
Yorkshire Durham Geometry Day



Wednesday 3 October, 2018

Department of Mathematics, University of York

11.00 **Coffee/Tea** *Topos (Mathematics Department, James College)*

12.00 **Norman Zergaenge** (Warwick/Hanover) *Room SLB 105 (Spring Lane Building)*

Compactness of Riemannian 4-manifolds with scale invariant integral curvature bounds

1.00 **Lunch** *Edge, Peter Lee Dining Room (Wentworth College)*

2.00 **Kim Moore** (UCL) *Room PL006 (Physics/Exhibition Centre)*

Special holonomy and calibrated geometry

3.00 **Joe Oliver** (Leeds) *Room PL006 (Physics/Exhibition Centre)*

On the index of harmonic maps from surfaces to complex projective spaces

3.40 **Tea/Coffee** *Topos (Maths Department, James College)*

4.30 **Katrin Leschke** (Leicester) *Room PL006 (Physics/Exhibition Centre)*

Darboux transforms of minimal surfaces

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Abstracts

Compactness of Riemannian 4-manifolds with scale invariant integral curvature bounds.

(Norman Zergaenge)

A key challenge in Riemannian geometry is to find "best" metrics on compact manifolds. To construct such metrics explicitly one is interested to know whether approximation sequences contain subsequences that converge in some sense to a limit manifold. In this talk I will present convergence results of sequences of closed Riemannian 4-manifolds with almost vanishing L2-norm of a curvature tensor and a non-collapsing bound on the volume of small balls. To prove these results, I use Jeffrey Streets' L2-curvature flow. This fourth-order evolution equation has several important applications in the context of 4-dimensional manifolds.

On the index of harmonic maps from surfaces to complex projective spaces. **(Joe Oliver)**

In 1983 J. Eells and J. C. Wood constructed (non holomorphic or antiholomorphic) harmonic maps from a Riemann surface of any genus to complex projective space of any dimension and gave a bound on their index. Later, in 1986 F. E. Burstall and J. C. Wood interpreted this construction by defining certain subbundles of a trivial bundle and maps between these subbundles. In this talk we will see the latter construction of these harmonic maps and some improvements to the index theorem of J. Eells and J. C. Wood for genus $g = 0$ or 1.