Applied and Computational Mathematics Seminar

Title: How much geometry do viruses know? A conjecture on scar-driven shape-changes of virus capsids

Speaker: Dr Alfredo Iorio (University of Prage - Institute of Particle and Nuclear Physics)

Date: Thu 28th February 2008 at 2:15PM

Location: Mathematical Sciences Seminar Room

Abstract: Certain viruses surely use the Euler-Poincare' theorem during the self-assembly of their protein capsids. This was clear to Crick and Watson in 1956 (conjecture) and to Caspar and Klug in 1962(proof). Here we try to understand how well those viruses know the theorem. Namely, we conjecture that next-to-simplest structures allowed by geometry and topology – and found in numerical and experimental work on the related Thomson problem – called 'scars' could appear (and then disappear) on the viral capsid during its evolution, the net effect being a non-spherical capsid with the Caspar and Klug capsomers.

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