

Report on PIMS/UNAM Algebra Summer School, July 2006

The objective of the summer school was to bring together researchers working in algebraic topics from the PIMS universities and UNAM in order to help establish collaborations. A number of expository lectures were given, on a wide range of topics covering representation theory, algebraic geometry, number theory and combinatorics. These talks helped establish a common language and a convergence of themes during the workshop, to the benefit of the students and postdocs who attended. The research talks were lively and of very high quality, leading to plenty of discussions.

A number of very useful interactions arose from the meeting, and there are tentative plans for organizing a sequel in Mexico. The following specific research topics were covered at the workshop:

- **Non-commutative blowing up and representations of $SL(2, C)$**
- **Schur algebras for classical groups**
- **Moduli spaces as a classification tool in the representation theory of finite dimensional algebras**
- **Preprojective algebras and cluster algebras**
- **Decomposition of modules over rings with several objects**
- **Quantized coordinate rings**
- **Quantum projective 3-spaces**
- **Donaldson-Thomas type invariants via microlocal geometry**
- **The total coordinate ring of a normal projective variety**
- **Constructing examples of automorphic representations**
- **Relative Gorenstein dimensions and stable equivalence**
- **Derived endo-discrete artin algebras**
- **Monomial Rees algebras and the Mengerian property**
- **Primitivity in twisted homogeneous coordinate rings**

- **Arithmetical invariants of algebraic cycles**
- **Deciding the existence of rational points on curves**
- **Artin-Schelter regular algebras and categories**