

## **Algebra and Algebraic Geometry**

The connection between commutative algebra and algebraic geometry goes beyond the ordinary bore of language transposition. In more recent years, this intimacy has grown into a considerable body of information and even more solemn topics such as characteristic  $p$  methods, have found deep applications throughout the entire field. In Brazil, research in these two kin areas was born in the spirit of close cooperation since its very inception. Its beginnings can be traced to no earlier than the mid seventies, thus placing it as very recent amidst other traditional areas of mathematics in the country. Thanks to this cohesive stirring the group has been successful in promoting activities within global science initiatives, most specially this Millennium Institute. This institution played a key role in stimulating the planning and the support of the following fundamental strategies for progress in the area: specialized meetings; interchange with foreign institutions; cooperation between established centers and emerging research groups; extending the cooperation research with Latin American counterparts and students and research projects. A substantial part of the scientific results by the group goes by way of a virtually existing cooperative network throughout the country that includes researchers in more than half a dozen institutions. The present number of pre-doctoral and doctoral students is still shy – 20 circa – but it is expected to grow in the foreseeable future in the presence of the above strategies, for which the Millennium shall continue to play a key role. A very prominent feature of the group is its foreign collaboration portfolio, including more than 30 renowned institutions spread through 11 countries. In the last two and a half years the publication output by members of the Millennium group accounts for nearly 60 papers published or accepted for publication in reputed international journals. This gives an average of 5 papers per capita during the period or 2 a year. This publication hinges upon a variety of themes, ranging from Rees algebras of special modules to module theoretic criteria of birationality, from arithmetical and geometric aspects of curve theory to moduli theory, from elliptic curves to rational points of curves in characteristic  $p$ , from arithmetic of fields to Witt theory, from D-modules to algebraic and holomorphic foliations to differential simplicity of rings, from general algebraic theory of singularities to Bernstein—Sato polynomials, from vector bundles over curves to enumerative geometry, classification of varieties and Mori theory.