*Main Talks*
**IV Seminar on Categories and Applications**
Bellaterra, 6 to 9 of June of 2007

## Ken Goodearl, University of California at Santa Barbara

*Poisson Algebras and Symplectic Cores (Leaves for Algebraists)*

**Abstract:** Poisson algebras are commutative algebras equipped with Poisson brackets. When an algebra of functions on a manifold (or variety) $M$ has such a structure, $M$ is partitioned into subsets called symplectic leaves. However, this is a differential-geometric process – even if $M$ is a smooth algebraic variety and the Poisson bracket is defined by polynomial functions, the symplectic leaves need not be algebraically defined sets. To stay within the algebraic category, a good replacement for symplectic leaves is the concept of symplectic cores introduced by Brown and Gordon, which are defined by means of Poisson ideals. We will introduce and discuss these concepts, describe some examples, and sketch relationships with noncommutative structures such as enveloping algebras and quantized coordinate rings.

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