

**Department of Mathematical Sciences  
Colloquium**

**LUIS VALDEZ**

*Some Applications of Low-Dimensional  
Topology to Algebra*

The connections between algebra and topology have been successfully exploited since the emergence of these two areas. In this talk, we will discuss the use of three-dimensional handlebodies in the solution of several algebraic questions, from the determination of primitive elements in the free group on two generators to the classification of all relators producing the group  $G_{p,q} = \langle x, y \mid x^p y^q \rangle$ . The arguments will be illustrated with numerous geometric realizations (i.e. figures) of the algebraic issues at hand. Though sometimes the topological approach may not settle an algebraic question completely, we will see it may still provide useful insights and guidance for an algebraic method of proof.

**Friday, September 28, 2007 at 3 pm in Bell Hall 143  
The University of Texas at El Paso**

Refreshments will be served in front of the colloquium room, 15 minutes before the start of the colloquium.

For further information, please contact Dr. Pavel Solin, Bell Hall 220. Phone: (915) 747-6770, email: [solin@utep.edu](mailto:solin@utep.edu).