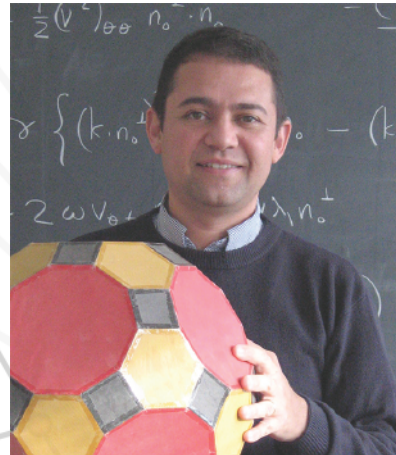# TEXAS ★ STATE
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University Lecturers Series
Department of Mathematics Colloquium

The little theorem that could:
How Sperner's coloring lemma influenced Mathematics, Comp Sci and Economics

Prof. Jesus De Loera
University of California Davis

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3:30 - 4:30pm
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Sperner's 1929 lemma is a simple and very cute mathematical statement about coloring triangles. Everybody can easily understand it!! Yet, despite its simplicity, Sperner's lemma has great depth as it is equivalent to famous results in Topology. But even if you do not care about advanced mathematics, Sperner's lemma has also many applications too: it has been used in computer science (computation of fixed points, in root-finding algorithms), in fair division analysis (cake cutting, rental agreements) algorithms and it is at the foundation of the proofs of existence of Nash equilibria in Game theory. Since 1929 several fascinating variations have been discovered and applied in recent years and there is renewed interest by theoretical computer scientists to find algorithmic versions. In my talk I will convince everyone should know about this lovely easy-to-understand, yet powerful, mathematical result. This presentation has no pre-requisites other than a willingness to learn and play with cool math!!!