Math Colloquium

Jody Trout
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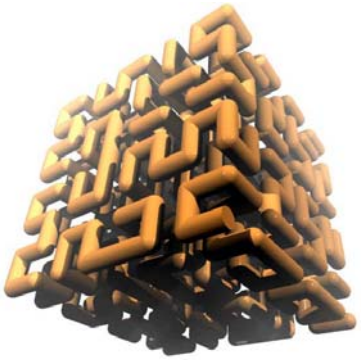
presents

The Fourth Dimension Across the Curriculum

Since the late 1800s, scientists, mathematicians, philosophers, and science-fiction writers have been fascinated with the concept that there exists an extra spatial dimension perpendicular to our usual three dimensions (up-down, left-right, and forward-backward) of geometric space. This is related to, but different than, treating time as a fourth dimension as in the space-time continuum of Albert Einstein's special theory of relativity. In this talk, we will discuss the geometric basics, history, and multi-disciplinary aspects of this 'notorious' Fourth Dimension!

4 p.m. Thursday, October 25, in Room 501
Refreshments will be served at 3:30 p.m. Room 401N

On the Nonexistence of Nontrivial Involutive n-Homomorphisms of C*-algebras



ABSTRACT. An n-homomorphism between algebras is a linear map $\phi : A \to B$ such that $\phi(a_1 \cdots a_n) = \phi(a_1) \cdots \phi(a_n)$ for all elements $a_1, \ldots, a_n \in A$. Every homomorphism is an n-homomorphism, for all $n \geq 2$, but the converse is false, in general. Hejazian *et al.* [7] ask: Is every $*$-preserving n-homomorphism between C^*-algebras continuous? We answer their question in the affirmative, but the even and odd n arguments are surprisingly disjoint. We then use these results to prove stronger ones: If $n > 2$ is even, then ϕ is just an ordinary $*$-homomorphism. If $n \geq 3$ is odd, then ϕ is a difference of two orthogonal $*$-homomorphisms. Thus, there are no *nontrivial* $*$-linear n-homomorphisms between C^*-algebras.

2 p.m. Friday, October 26, in Room 401N