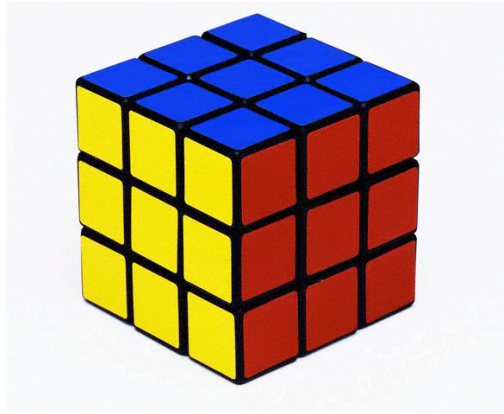


# Pi Mu Epsilon and Undergraduate Colloquium

present...

## The Rubik's Cube



Dr. Morley Davidson

MSB 121

Friday, November 3, 2006 at 4:00 PM

Title: The Mathematics of Rubik's Cube

Abstract: In this talk we will discuss mathematical questions dealing with Rubik's Cube, the most popular puzzle of all time and the perfect manipulative for learning about noncommutative group theory. With a Rubik's Cube, one can quickly gain a working understanding of the group-theoretic concepts of inverse, order, conjugates, normal subgroup, commutator, even and odd permutations, group action on sets, symmetry groups, and so forth, and then apply these ideas to solving the cube completely.

We will also discuss ongoing computer research into solving the cube with a minimal number of turns ("God's Algorithm") and outline some pros and cons of three popular speedcubing systems, one of which is currently used by top speed demons to regularly solve the cube in under 13 seconds! Another system is also used to solve the cube in about 40 moves, given an hour to work on it. Finally, we will announce and discuss a new "40/40 Challenge"-- can a human being solve the cube in under 40 moves and 40 seconds on average? Computers and robotics can already see 20/20 in this respect, but according to futurists, goals like this may soon be possible by nearly everyone. However, it may involve stretching the meaning of "human being"....

*Pizza will be served*

~More info about Undergrad Colloquium <http://www.math.kent.edu/~sather/ugcolloq.html>

~Pi Mu Epsilon Website <http://www.kent.edu/math/Undergraduate/pimuepsilon/index.cfm>