

# Society for Undergraduate Mathematics

Presents:

## **Research Experience for Undergraduates at Temple: New kind of algebras**

by Yury Grabovsky

In the first lecture I have described the how a question in the theory of composite materials leads to a problem in linear algebra. This problem is the following: Find all subspaces  $\Pi$  of the space of all  $3 \times 3$  matrices satisfying  $KAK \in \Pi$  for all  $K \in \Pi$  and all  $A$  of the form

$$A = \begin{bmatrix} a & b & 0 \\ b & -a & 0 \\ 0 & 0 & 0 \end{bmatrix}$$

This lecture will be completely independent of the first one. In this lecture I will describe the plan of attack on the above problem. You will see how abstract concepts of linear algebra take concrete shape and allow us to crack the problem. The REU team didn't use computers to solve this problem, they used the force, the force of linear algebra.

Thursday October 24, 2002

Wachman Hall, Room 617, 4:00pm

Graduate students are especially welcome!

Free Doughnuts and Coffee will be available from 3:45 to 4pm.