WICHITA STATE UNIVERSITY

Department of Mathematics and Statistics

The Lecture Series in the Mathematical Sciences Presents Our Guest:

Prof. Jagdish Srivastava

Colorado State University

"Hermitian Algebras Derivable from Latin Squares, with Application to Physics"

Abstract:

A square matrix H is Hermitian if $H=A+iB$, where A and B are real, and $A`=A$, $B`= -B$, where for any matrix G, we denote the transpose of G by $G`$, and where i denotes the square root of (-1). A set of Hermitian matrices is said to form an algebra if the sum and the product of any two matrices in the set is also in the set. In this paper, we introduce an infinite class of Hermitian algebras derived from Latin squares of size nxn, where n is of the form $(4s+1)$, where s is a prime number or a power of a prime. Unitary tranformations that diagonalize the matrices in such algebras are also studied. We recall from Quantum Mechanics that every physically observable variable corresponds to a Hermitian matrix. Hermitian algebras would then correspond to sets of variables that are simultaneously observable.

Friday, March 31, 2006
3:00 PM in 372 Jabara Hall

Please come join us for refreshments before the lecture at 2:30 p.m. in room 353 Jabara Hall.