Department of Mathematics and Statistics
Colloquium Lecture Series

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The Isomorphic Structure of Spaces of Operators

Each of X and Y is a real Banach space, $L(X, Y)$ is the space of all continuous linear functions (= operators) from X to Y, and $K(X, Y)$ is the space of compact operators from X to Y. The following two questions are of central importance in this talk:

1) What is the isomorphic structure of $L(X, Y)$? That is, for which classical Banach spaces Z does there exist a linear homeomorphism from Z into $L(X, Y)$? In many cases we shall see that the isomorphic structure of $L(X, Y)$ is incredibly complex.
2) Is $K(X, Y)$ complemented in $L(X, Y)$? That is, does there exist an idempotent operator from $L(X, Y)$ onto $K(X, Y)$? The conjecture is that the compact operators are not complemented if there is an operator from X to Y which is not compact.

Numerous authors have investigated these two questions during the past 50 years. Specifically, results of Kalton, Feder, Emmanuele, and John will be reviewed. Recently Schulle and Lewis established a simple vector measure theory interpretation of one of Kalton's results. The vector measure approach leads to extensions of results of these four authors. An (almost) elementary proof of the vector measure theorem will be presented and applications will be discussed.

Thursday, May 29, 2008
Chapman 106
1:00 – 2:00 pm

Refreshments after the talk in Chapman 101A