

Invariant Subspaces and Orbits of Operators

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The problem, whether every continuous linear operator has a non-trivial closed invariant subspace is still open for operators on reflexive Banach spaces, in particular Hilbert space. Existence of non-trivial invariant subspaces has been proved for many classes of operators. In 1995 the author discovered that various types of extremal vectors can be used to construct invariant subspaces for operators on Hilbert space and even on Banach spaces. One example of extremal vector is the best approximate solution of the (unsolvable) equation $Tx = y$, when T is an operator with dense range and y is not in the range of T . This approach to the invariant subspace problem leads to new types of problems in Operator Theory, problems which we feel are of interest in themselves. The invariant subspace problem asks if all orbits of vectors span the whole space, but does not ask more detailed questions about the orbits. In doing so, we are led to problems in Operator Theory, Classical Analysis and the Geometry of Banach spaces, problems, which we feel are of interest in themselves.

The lecture will take place in Thackeray 704 at 2pm.
Refreshments will start at 1:30pm.