

POSITIVE ANSWER TO THE INVARIANT AND HYPERINVARIANT SUBSPACES PROBLEM

SALAH MECHERI

DEPARTMENT OF MATHEMATICS, FACULTY OF
MATHEMATICS AND INFORMATICS, EL BACHIR EL
IBRAHIMI UNIVERSITY, BORDJ BOU ARRERIDJ, ALGERIA

ABSTRACT. The question whether every operator on infinite dimensional Hilbert space H has a non-trivial invariant subspace is one of the most difficult unsolved problem in operator theory. This problem is open for more than half a century. A closed subspace of a Hilbert space H is invariant for an operator $T \in B(H)$ or M is an invariant subspace for T if $TM \subseteq M$, that is, there exists $x \in M$ such that $Tx = x$. By definition x is a fixed point. Thus the existence of an invariant subspace implies the existence of a fixed point. In this lecture I give a positive answer to this problem. To solve this problem I will use:

1. Spectral theory;
2. Local spectral theory;
3. Linear algebra and operator matrix,
4. Lie Bracket;
5. Lie Algebra
6. Operator equation;
6. Probability
7. Topological space.

REFERENCES

- [1] S. Mecheri, Positive Answer to the invariant and hyperinvariant subspace problems for hyponormal operator, Georgian. Math. Jour. Accepted.