

## Abstract

Similarity and unitary equivalence can be shown to be of equivalence relations. We discuss a result showing that two similar operators have equal spectra (i.e. point and approximate point spectrum). More so, unitary equivalence results for invariant subspaces and normal operators are proved. For similar normal operators, we state the Fuglede – Putnam – Rosenblum theorem that makes proofs for similar normal operators more simplified. It is also noted that direct sums and summands are preserved under unitary equivalence. Furthermore, we show that the natural concept of equivalence between Hilbert Space operators is unitary equivalence which is stronger than similarity. By introducing the notion of quasisimilarity of operators which is the same as similarity in finite dimensional spaces, but in infinite dimensional spaces, it is a much weaker relation, we further show that quasisimilarity is an equivalence relation. We also link invariant subspaces and hyperinvariant subspaces with quasisimilarity where it is seen that similarity preserves nontrivial invariant subspaces while quasisimilarity preserves nontrivial hyperinvariant subspaces.