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Alexey I. Popov* (a4popov@uwaterloo.ca), Pure Mathematics, University of Waterloo, 200 University Avenue West, Waterloo, ON N2L 3G1, Canada. *Commutators of small rank and reducibility of operator semigroups.*

It is easy to see that if G is a group of unitary matrices, then the condition that the rank of $AB-BA$ is at most one for all A and B in G implies that G is abelian. For semigroups of operators on Banach spaces, the corresponding problem is more difficult and was a subject of study of a series of papers culminating in a work of Drnovsek who showed that every non-abelian operator semigroup satisfying this condition is reducible (that is, has a common invariant subspace). We examine the consequences of the assumption that the rank of $AB-BA$ is at most two for all operators in the semigroup S . Our conclusion is that under obviously necessary, but trivial, size conditions, S is reducible. This is a joint work with A.Jafarian, M.Radjabalipour and H.Radjavi. (Received December 04, 2012)