Operators and Matrices
Volume 8, Number 4 (2014), 1175–1180
doi:10.7153/oam-08-67

ON THE INVERSE–CLOSEDNESS OF MATRIX SUBALGEBRAS

NAHUM KRUPNIK

Abstract. In this short article we construct a counterexample, which gives a negative answer to an old question, formulated in several publications, on inverse-closedness of matrix subalgebras. We also present and prove several related results.

Mathematics subject classification (2010): Primary 47A11, Secondary 45E10.
Keywords and phrases: Banach algebras, inverse-closed subalgebras of Banach algebras.

REFERENCES

[1] BRUCE A. BARNES, *Questions concerning matrix algebras and invariance of spectrum*, Proc. Indian Acad. Sc. (Math. Sci) February 2003. pp. 71–76.
[2] I. GOHBERG AND N. KRUPNIK, *One-Dimensional Linear Singular Integral Equations*, Vol I, OT 53, Birkhäuser Verlag (1992).
[3] N. KRUPNIK, *Banach Algebras with Symbols and Singular Integral Operators*, OT 26, Birkhäuser Verlag (1987).
[4] N. KRUPNIK, *On multidimensional singular integral operators in local convex spaces*, Ph. D. thesis, Leningrad University (1965), (Russian).
[5] N. KRUPNIK AND MARINA MARKUS, *On the inverse-closedness of some Banach subalgebras*, Issledovanoia po dif. uravnenijam i mat. analizu. Kishinev, Stiinca, 1988, (93–99), (Russian).
[6] S. G. MIHLIN, *On the index of a system of singular equations*, Soviet Math. Dokl., 3 (1963), 1368–1371.
[7] S. G. MIKHLIN, S. PRËSSDORF, *Singular Integral operators*, Springer-Verlag, Berlin, 1986.
[8] S. ROCH, A. P. SANTOS, B. SILBERMANN, *Non-commutative Gelfand Theories*, Springer, (2011).
[9] A. I. VOL'PERT, *The index of boundary value problems for systems of harmonic functions in three independent variables*, Soviet Math. Dokl., 1 (1960), 791–793.
[10] A. I. VOLPERT, *The index of systems of two-dimensional singular integral equations*, Soviet Math Dokl. 3 (1962), 154, 776–777.

Paper OaM-08-67