Hadder, Youness

The kh-socle of a commutative semisimple Banach algebra. (English) Zbl 1499.46108

Math. Bohem. 145, No. 4, 387-399 (2020).

Summary: Let $\mathcal{A}$ be a commutative complex semisimple Banach algebra. Denote by $\mathrm{kh}(\mathrm{soc}(\mathcal{A}))$ the kernel of the hull of the socle of $\mathcal{A}$. In this work we give some new characterizations of this ideal in terms of minimal idempotents in $\mathcal{A}$. This allows us to show that a "result" from Riesz theory in commutative Banach algebras is not true.

MSC:

46J05 General theory of commutative topological algebras
46J20 Ideals, maximal ideals, boundaries
47A10 Spectrum, resolvent

Keywords:

commutative Banach algebra; socle; kh-socle; inessential element

Full Text: DOI

References:

[1] Aiena, P., Fredholm and Local Spectral Theory, with Applications to Multipliers, Kluwer Academic Publishers, Dordrecht (2004) · Zbl 1077.47001 · doi:10.1007/1-4020-2525-4

[2] Alexander, J. C., Compact Banach algebras, Proc. Lond. Math. Soc., III. Ser. 18 (1968), 1-18 · Zbl 0184.16502 · doi:10.1112/plms/s3-18.1.1

[3] Al-Moajil, A. H., The compactum of a semi-simple commutative Banach algebra, Int. J. Math. Math. Sci. 7 (1984), 821-822 · Zbl 0599.46072 · doi:10.1155/s0161171284000855

[4] Androulakis, G.; Schlumprecht, T., Strictly singular, non-compact operators exist on the space of Gowers and Maurey, J. Lond. Math. Soc., II. Ser. 64 (2001), 655-674 · Zbl 1015.46007 · doi:10.1112/s0024610701002769

[5] Aupetit, B., A Primer on Spectral Theory, Universitext. Springer, New York (1991) · Zbl 0715.46023 · doi:10.1007/978-1-4612-3048-9

[6] Aupetit, B.; Mouton, H. du T., Spectrum preserving linear mappings in Banach algebras, Studia Math. 109 (1994), 91-100 · Zbl 0829.46039 · doi:10.4064/sm-109-1-91-100

[7] Barnes, B. A., A generalized Fredholm theory for certain maps in the regular representations of an algebra, Can. J. Math. 20 (1968), 495-504 · Zbl 0159.18502 · doi:10.4153/cjm-1968-048-2

[8] Barnes, B. A., The Fredholm elements of a ring, Can. J. Math. 21 (1969), 84-95 · Zbl 0175.44101 · doi:10.4153/cjm-1969-009-1

[9] Barnes, B. A.; Murphy, G. J.; Smyth, M. R. F.; West, T. T., Riesz and Fredholm Theory in Banach Algebras, Research Notes in Mathematics 67. Pitman Advanced Publishing Program, Boston (1982) · Zbl 0534.46034

[10] Boudi, N.; Hadder, Y., On linear maps preserving generalized invertibility and related properties, J. Math. Anal. Appl. 345 (2008), 20-25 · Zbl 1178.47023 · doi:10.1016/j.jmaa.2008.03.066

[11] Puhl, J., The trace of finite and nuclear elements in Banach algebras, Czech. Math. J. 28 (1978), 656-676 · Zbl 0394.46041 · doi:10.21136/CMJ.1978.101567

[12] Rickart, C. E., General Theory of Banach Algebras, The University Series in Higher Mathematics. D. Van Nostrand, Princeton (1960) · Zbl 0095.09702

[13] Smyth, M. R. F., Riesz theory in Banach algebras, Math. Z. 145 (1975), 145-155 · Zbl 0298.46049 · doi:10.1007/bf01214779

[14] Wang, X.; Cao, P., Spectral characterization of the kh-socle in Banach Jordan algebras, J. Math. Anal. Appl. 466 (2018), 567-572 · Zbl 1407.46041 · doi:10.1016/j.jmaa.2018.06.003