

Complex Banach Spaces with Valdivia Dual Unit Ball*

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ABSTRACT

We study the classes of complex Banach spaces with Valdivia dual unit ball. We give complex analogues of several theorems on real spaces. Further we study relationship of these complex Banach spaces with their real versions and that of real Banach spaces and their complexification. We also formulate several open problems.

REFERENCES

- [1] ARCHANGEL'SKIJ, A.V., "Topological Spaces of Functions", Kluwer Acad. Publ., Dordrecht – Boston – London, 1992.
- [2] ARGYROS, S., MERCOURAKIS, S., On weakly Lindelöf Banach spaces, *Rocky Mountain J. Math.*, **23** (1993), 395–446.
- [3] DEVILLE, R., GODEFROY, G., Some applications of projective resolutions of identity, *Proc. London Math. Soc.*, **67** (1993) no. 1, 183–199.
- [4] FABIAN, M., "Gâteaux Differentiability of Convex Functions and Topology: Weak Asplund Spaces", Wiley-Interscience, New York, 1997.
- [5] HABALA, P., HÁJEK, P., ZIZLER, V., "Introduction to Banach Spaces", Lecture Notes, Matfyzpress, Prague, 1996.
- [6] KALENDA, O., A characterization of Valdivia compact spaces, *Collectanea Math.*, **51** (2000) no. 1, 59–81.
- [7] KALENDA, O., Valdivia compact spaces in topology and Banach space theory, *Extracta Math.*, **15** (2000) no. 1, 1–85.
- [8] KALENDA, O., A new Banach space with Valdivia dual unit ball, *Israel J. Math.*, **131** (2001), 139–147

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- [9] KALENDA, O., Descriptive hierarchy of complex Banach spaces, *Unpublished manuscript, available as Preprint MATH-KMA-2005/169 at <http://www.karlin.mff.cuni.cz/kma-preprints>*
- [10] POL, R., On pointwise and weak topology on function spaces, *Preprint 4/84, Warsaw Univ.* (1984).
- [11] TUREK, S., Minimal actions on Cantor cubes, *Bull. Polish Acad. Sci. Math.*, **51** (2003) no. 2, 129–138.
- [12] VALDIVIA, M., Projective resolutions of the identity in $C(K)$ spaces, *Archiv der Math.*, **54** (1990), 493–498.
- [13] VALDIVIA, M., Simultaneous resolutions of the identity operator in normed spaces, *Collectanea Math.*, **42** (1991) no. 3, 265–285.
- [14] VESELÝ, L., ZAJÍČEK, L., Delta-convex mappings between Banach spaces and applications, *Dissertationes Math.*, **CCLXXXIX** (1989), 1–52.