MOORE–PENROSE INVERSE OF CONDITIONAL TYPE OPERATORS

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Abstract. We prove some basic results on some Moore-Penrose inverse of conditional type operators on $L^2(\Sigma)$. For instance, we show, among other results, that a weighted conditional operator $T = M_w E M_u$ is centered if and only if $T^\dagger$, the Moore-Penrose inverse of T, is centered. In addition, we establish lower and upper bounds for the numerical range of T and $T^\dagger$.

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REFERENCES

[1] A. BEN-ISRAEL AND T. N. E. GREVILLE, *Generalized inverses: theory and applications*, Second Ed., Springer, 2003.

[2] J. DING AND W. E. HORNOR, *A new approach to Frobenius-Perron operators*, J. Math. Anal. Appl. **187** (1994), 1047–1058.

[3] D. S. DJORDJEVIĆ AND N. C. DINČIĆ, *Reverse order law for the Moore-Penrose inverse*, J. Math. Anal. Appl. 361 (2010) 252–261.

[4] Y. ESTAREMI, M. R. JABBARZADEH, *Weighted lambert type operators on Lp-spaces*, Oper. Matrices **7** (2013), 101–116.

[5] Y. ESTAREMI, M. R. JABBARZADEH, *Weighted composition Lambert-type operators on L^p spaces*, Mediterr. J. Math. **11** (2014), 955–964.

[6] Y. ESTAREMI, *Some classes of weighted conditional type operators and their spectra*, Positivity **19** (2015), 83–93.

[7] Y. ESTAREMI, *Centered weighted conditional type operators*, arxiv.org.

[8] T. FURUTA, *Invitation to linear operators*, Taylor & Francis, Ltd., London, 2001.

[9] J. J. GROBLER AND B. DE PAGTER, *Operators representable as multiplicationconditional expectation operators*, J. Oper. Theory **48** (2002), 15–40.

[10] J. HERRON, *Weighted conditional expectation operators*, Oper. Matrices **5** (2011), 107–118.

[11] M. R. JABBARZADEH, *A conditional expectation type operator on L^p spaces*, Oper. Matrices **4** (2010), 445–453.

[12] I. B. JUNG, E. KO AND C. PEARCY, *Aluthge transforms of operators*, Integral Equations Operator Theory **37** (2000), 437–448.

[13] B. B. MORRELL AND P. S. MUHLY, *Centered operators*, Studia Math. **51** (1974), 251–263.

[14] A. LAMBERT, *L^p-multipliers and nested sigma-algebras*, Oper. Theory Adv. Appl. **104** (1998), 147–153.

[15] A. LAMBERT AND B. WEINSTOCK, *A class of operator algebras induced by probabilistic conditional expectations*, Michigan Math. J. **40** (1993), 359–376.

[16] M. M. RAO, *Conditional measure and applications*, Marcel Dekker, New York, 1993.

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