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ON SOME NEW INEQUALITIES FOR FUSION FRAMES IN HILBERT SPACES

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Abstract. Recently fusion frame was considered as a generalization of frame in Hilbert spaces. In this paper, we establish several new inequalities for fusion frames with a scalar in Hilbert spaces. It is shown that the results we obtained can immediately lead to the existing corresponding results when we choose suitable scalars.

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REFERENCES

[1] RADU BALAN, PETER CASAZZA, DAN EDIDIN, AND GITTA KUTYNIOK, *A new identity for parseval frames*, Proceedings of the American Mathematical Society **135** (4): 1007–1015, 2007.
[2] BERNHARD G. BODMANN, *Optimal linear transmission by loss-insensitive packet encoding*, Applied and Computational Harmonic Analysis **22** (3): 274–285, 2007.
[3] H. BOLCSKEI, FRANZ HLAWATSCH, AND HANS G. FEICHTINGER, *Frame-theoretic analysis of oversampled filter banks*, IEEE Transactions on signal processing **46** (12): 3256–3268, 1998.
[4] PETROS BOUFOUNOS, GITTA KUTYNIOK, AND HOLGER RAUHUT, *Sparse recovery from combined fusion frame measurements*, IEEE Transactions on Information Theory **57** (6): 3864–3876, 2011.
[5] PETER G. CASAZZA AND GITTA KUTYNIOK, *Frames of subspaces*, Contemporary Mathematics **345**: 87–114, 2004.
[6] PETER G. CASAZZA, GITTA KUTYNIOK, AND SHIDONG LI, *Fusion frames and distributed processing*, Applied and computational harmonic analysis **25** (1): 114–132, 2008.
[7] AMINA CHEBIRA, MATTHEW FICKUS, AND DUSTIN G MIXON, *Filter bank fusion frames*, IEEE Transactions on Signal Processing **59** (3): 953–963, 2011.
[8] OLE CHRISTENSEN, *An introduction to frames and Riesz bases*, vol. 7. Springer, 2003.
[9] INGRID DAUBECHIES, ALEX GROSSMANN, AND YVES MEYER, *Painless nonorthogonal expansions*, Journal of Mathematical Physics **27** (5): 1271–1283, 1986.
[10] RICHARD J. DUFFIN AND ALBERT C. SCHAEFFER, *A class of nonharmonic fourier series*, Transactions of the American Mathematical Society **72** (2): 341–366, 1952.
[11] P. GĂVRUŢA, *On some identities and inequalities for frames in hilbert spaces*, Journal of mathematical analysis and applications **321** (1): 469–478, 2006.
[12] P. GĂVRUŢA, *On the duality of fusion frames*, Journal of Mathematical Analysis and Applications **333** (2): 871–879, 2007.
[13] QIANPING GUO, JINSONG LENG, AND HOUBIAO LI, *Some equalities and inequalities for fusion frames*, Springer Plus **5** (1): 1, 2016.
[14] DEGUANG HAN, *Frames for undergraduates*, vol. 40. American Mathematical Soc., 2007.
[15] JINSONG LENG, QIXUN GUO, AND TINGZHU HUANG, *The duals of fusion frames for experimental data transmission coding of high energy physics*, Advances in High Energy Physics, 2013, 2013.
[16] JINSONG LENG, DEGUANG HAN, AND TINGZHU HUANG, *Optimal dual frames for communication coding with probabilistic erasures*, IEEE transactions on signal processing **59** (11): 5380–5389, 2011.
[17] THOMAS STROHMER AND ROBERT W. HEATH, *Grassmannian frames with applications to coding and communication*, Applied and computational harmonic analysis **14** (3): 257–275, 2003.

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[18] ZHONG-QI XIANG, *New inequalities for g-frames in Hilbert C*-modules*, Journal of Mathematical Inequalities **10** (3): 889–897, 2016.
[19] XIANG-CHUN XIAO, YU-CAN ZHU, AND MING-LING DING, *Erasures and equalities for fusion frames in Hilbert spaces*, Bulletin of the Malaysian Mathematical Sciences Society **38** (3): 1035–1045, 2015.
[20] XIUGE ZHU AND GUOCHANG WU, *A note on some equalities for frames in hilbert spaces*, Applied Mathematics Letters **23** (7): 788–790, 2010.