[October 15, 2014]

Matrix Tricks for Linear Statistical Models: Our Personal Top Twenty

Updates in the References[1]

Changes are shown in red.

Bapat, R. B. (2012). *Linear Algebra and Linear Models*, Third Ed. Springer.

Chatterjee, S. & Hadi, A. S. (2012). *Regression Analysis by Example*, Fifth Ed. Wiley.

Christensen, R. (2011). *Plane Answers to Complex Questions: The Theory of Linear Models*, Fourth Ed. Springer.

Golub, G. H. & Van Loan, C. F. (2012). *Matrix Computations*. Fourth Ed. Johns Hopkins University Press.

Haslett, S. J. & Puntanen, S. (2011). On the equality of the BLUPs under two linear mixed models. *Metrika*, 74, 381–395.

Hauke, J., Markiewicz, A. & Puntanen, S. (2012). Comparing the BLUEs under two linear models. *Communications in Statistics: Theory and Methods*, 41, 2405–2418.

Horn, R. A. & Johnson, C. R. (2012). *Matrix Analysis*. Second Ed. Cambridge University Press.

Luati, A. & Proietti, T. (2011). On the equivalence of the weighted least squares and the generalised least squares estimators, with applications to kernel smoothing. *Annals of the Institute of Statistical Mathematics*, 63, 851–871.

Puntanen, S. (2011). Solution to Problem 4/SP08 in *Statistical Papers* (Problem proposed by Götz Trenkler & Dietrich Trenkler). 52, 509–510.

Puntanen, S., Seber, G. A. F. & Styan, G. P. H. (2013). Multivariate statistical analysis. In Handbook of Linear Algebra (L. Hogben, ed.), Chapman & Hall/CRC, Chapter 70, pp. 70.1–70.17.

Puntanen, S. & Styan, G. P. H. (2013). Random vectors and linear statistical models. In Handbook of Linear Algebra (L. Hogben, ed.), Chapman & Hall/CRC, Chapter 71, pp. 71.1–71.16.

Zhang, F. (2011). *Matrix Theory: Basic Results and Techniques*, Second Ed. Springer.

♠ New References, Likely to Be Added (in Due Course . . .)

Arendacká, B. & Puntanen, S. (2014). Further remarks on the connection between fixed linear model and mixed linear model. *Statistical Papers*, accepted. DOI.

[1]Thanks go to Götz Trenkler, Eva Fišerová, Nicholas J. Cox, and N. Rao Chaganty.

Baksalary, O. M. & Trenkler, G. (2011). Between OLSE and BLUE. *Australian & New Zealand Journal of Statistics*, 53, 289–303.

Baksalary, O. M., Trenkler, G. & Liski, E. P. (2013). Let us do the twist again. *Statistical Papers*, 54, 1109–1119. DOI.

Banerjee, S. & Roy. A. (2014). *Linear Algebra and Matrix Analysis for Statistics.* Chapman & Hall/CRC.

Chaganty, N. R. & Joe, H. (2004). Efficiency of generalized estimating equations for binary responses. *Journal of the Royal Statistical Society, Ser. B,* 66, 851–860.

Chatterjee, S. & Simonoff, J. S. (2013). *Handbook of Regression Analysis.* Wiley.

Chipman, J. S. (2011). *Advanced Econometric Theory.* Routledge.

Christensen, R. & Lin, Y. (2013). Linear models that allow perfect estimation. *Statistical Papers*, 54, 695–708. DOI.

Chu, Ka Lok; Puntanen, Simo & Styan, George P. H. (2014). Properties of a special symmetric matrix associated with postage stamps. *Contributions to Mathematics, Statistics, Econometrics, and Finance: Essays in Honour of Professor Seppo Pynnönen.* University of Vaasa. Acta Wasaensia 296, Statistics 7, 33–41. ISBN 978-952-476-523-7 (online). Download.

David, H. A. (2006). The introduction of matrix algebra into statistics. *The American Statistician*, 60, 162.

deLaubenfels, R. (2006). The victory of least squares and orthogonality in statistics. *The American Statistician*, 60, 315–321.

Fišerová, E., Kubáček, L. & Kunderová, P. (2007). *Linear Statistical Models: Regularity and Singularities.* Academia [Publisher in Prague].

Grafarend, E. & Awange, J. (2012). *Applications of Linear and Nonlinear Models: Fixed Effects, Random Effects, and Total Least Squares.* Springer.

Güler, N. Puntanen, S. & Özdemir, H. (2014). On the BLUEs in two linear models via C. R. Rao's Pandora's Box. *Communications in Statistics: Theory and Methods*, 43, 921–931. DOI.

Gustafson, K. (2012). *Antieigenvalue Analysis: With Applications to Numerical Analysis, Wavelets, Statistics, Quantum Mechanics, Finance and Optimization.* World Scientific.

Haslett, S. J. & Govindaraju, K. (2012). Data cloning: Data visualisation, smoothing, confidentiality, and encryption. *Journal of Statistical Planning and Inference*, 142, 410–422.

Haslett, S. J. & Puntanen, S. (2013). A review of conditions under which BLUEs and/or BLUPs in one linear mixed model are also BLUEs and/or BLUPs in another. *Calcutta Statistical Association Bulletin*, (Special 8th Triennial Symposium Proceedings Volume, Asis Kumar Chattopadhyay & Arindam Sengupta, Editors),

Haslett, S. J., Isotalo, J., Liu, Y. & Puntanen, S. (2014). Equalities between OLSE, BLUE and BLUP in the linear model. *Statistical Papers*, 55, 543–561. DOI.

Haslett, S. J., Puntanen, S. & Arendacká, B. (2014). The link between the mixed and fixed linear models revisited. *Statistical Papers*, available online, DOI.

Hauke, J., Markiewicz, A. & Puntanen, S. (2013). Revisiting the BLUE in a linear model via proper eigenvectors. *Combinatorial Matrix Theory and Generalized Inverses of Matrices*. (R. B. Bapat, S. J. Kirkland, K. M. Prasad & S. Puntanen, eds.) Springer, 73–83. Article's DOI, Book's DOI, Website.

Krämer W., Bartels R., Fiebig D. G. (1996). Another twist on the equality of OLS and GLS. *Statistical Papers*, 37, 277–281.

Liu, X.-Q., Rong, J.-Y. & Liu, X.-Y. (2008). Best linear unbiased prediction for linear combinations in general mixed linear models. *Journal of Multivariate Analysis*, 99, 1503–1517.

Liu, X. & Wang, Q.-W. (2013). Equality of the BLUPs under the mixed linear model when random components and errors are correlated. *Journal of Multivariate Analysis*, 116, 297–309.

Lu, C., Sun, Y. & Tian, Y. (2013). On relations between weighted least-squares estimators of parametric functions under a general partitioned linear model and its small models. *Metrika*, 76, 707–722.

Markiewicz, A. & Puntanen, S. (2015). All about the $\perp$ with its applications in the linear statistical models. *Open Mathematics*, 13, 33–50. (Open access, to appear)

O'Hagan, T. (2012). A thing of beauty. *Significance*, 9, 26–28.

Pordzik, P. R. (2011). Orthogonality and linear sufficiency in partitioned and reduced linear models. *Communications in Statistics: Theory and Methods*, 40, 1124–1130.

Pordzik, P. R. (2012). A bound for the Euclidean distance between restricted and unrestricted estimators of parametric functions in the general linear model. *Statistical Papers*, 53, 299–304.

Puntanen, S., Styan, G. P. H. & Isotalo, J. (2013). *Formulas Useful for Linear Regression Analysis and Related Matrix Theory: It's Only Formulas But We Like Them*. Springer. xii+125 pages. ISBN: 978-3-642-32930-2. Book's website/Springer.

Speed, T. P. (2012). Terence's Stuff: Multiple linear regression, Part 1. *The IMS Bulletin*, 41, Issue 5, 13.

Speed, T. P. (2012). Terence's Stuff: Multiple linear regression, Part 2. *The IMS Bulletin*, 41, Issue 6, 19.

Speed, T. P. (2013). Terence's Stuff: n vs $n-1$? *The IMS Bulletin*, 42, Issue 1, 15.

Speed, T. P. (2013). Terence's Stuff: Least-but-not-last squares. *The IMS Bulletin*, 42, Issue 3, 19.

Tian, Y. (2013). On properties of BLUEs under general linear regression models. *Journal of Statistical Planning and Inference*, 143, 771–782. DOI

Tian, Y. & Zhang, J. (2011). Some equalities for estimations of partial coefficients under a general linear regression model. *Statistical Papers*, 52, 911–920.

Wang, Q.-W. & Liu, X. (2013). The equalities of BLUPs for linear combinations under two general linear mixed models. *Communications in Statistics: Theory and Methods*, 42, 3528–3543. DOI.

Wang, L. & Yang, H. (2012). Matrix Euclidean norm Wielandt inequalities and their applications to statistics. *Statistical Papers*, 53, 521–530.

Yanai, H., Takeuchi, K. & Takane, Y. (2011). *Projection Matrices, Generalized Inverse Matrices, and Singular Value Decomposition*. Springer.

Yang, H. & Wu, J. (2011). Some matrix norm Kantorovich inequalities and their applications. *Communications in Statistics: Theory and Methods*, 40, 4078–4085.