LIST OF PUBLICATIONS OF M. AKAHIRA

Here, [AT ·] means the papers involved and numbered in the volume entitled "*Joint Statistical Papers of Akahira and Takeuchi*," from the World Scientific Publishing Co., Inc., in 2003. The mark "⋆" means the book.

1975

[1] Characterizations of prediction sufficiency (adequacy) in terms of risk functions, (with K. Takeuchi). *Ann. Statist.* **3**(4), 1018–1024. [AT1]

[2] Asymptotic theory for estimation of location in non-regular cases. I. Order of convergence of consistent estimators. *Rep. Stat. Appl. Res., JUSE* **22**(1), 8–26.

[3] Asymptotic theory for estimation of location in non-regular cases. II. Bounds of asymptotic distributions of consistent estimators. *Rep. Stat. Appl. Res., JUSE* **22**(3), 3–19.

[4] A note on the second order asymptotic efficiency of estimators in an autoregressive process. *Rep. Univ. Electro-Commun.* **26**(1), 143–149.

1976

[5] On the second order asymptotic efficiency of estimators in multiparameter cases, (with K. Takeuchi). *Rep. Univ. Electro-Commun.* **26**(2), 261–269. [AT2]

[6] A remark on asymptotic sufficiency of statistics in non-regular cases. *Rep. Univ. Electro-Commun.* **27**(1), 125–128.

[7] On Gram-Charlier-Edgeworth type expansion of the sums of random variables (I), (with K. Takeuchi). *Rep. Univ. Electro-Commun.* **27**(1), 95–115. [AT3]

[8] On Gram-Charlier-Edgeworth type expansion of the sums of random variables (II), (with K. Takeuchi). *Rep. Univ. Electro-Commun.* **27**(1), 117–123. [AT4]

[9] On the asymptotic efficiency of estimators in an autoregressive process. *Ann. Inst. Statist. Math.* **28**(1), 35–48.

[10] On the second order asymptotic efficiencies of estimators, (with K. Takeuchi). *Proceedings of the Third Japan-USSR Symposium on Probability Theory*, Lecture Notes in Mathematics, Vol. 550, Springer, Berlin, 604–638. [AT5]

1977

[11] Extension of Edgeworth type expansion of the distribution of the sums of i.i.d. random variables in non-regular cases, (with K. Takeuchi). *Ann. Inst. Statist. Math.* **29**(3), 397–406. [AT6]

[12] A remark on comparison with a maximum likelihood estimator in asymptotic variances in a non-regular case. *Rep. Univ. Electro-Commun.* **27**(2), 309–311.

1978

[13] On Gram-Charlier-Edgeworth type expansion of the sums of random variables. III. Multivariate cases, (with K. Takeuchi). *Rep. Univ. Electro-Commun.* **28**(2), 259–269. [AT7]

[14] Third order asymptotic efficiency of maximum likelihood estimator for multiparameter exponential case, (with K. Takeuchi). *Rep. Univ. Electro-Commun.* **28**(2), 271–293. [AT8]

[15] Asymptotic optimality of the generalized Bayes estimator, (with K. Takeuchi). *Rep. Univ. Electro-Commun.* **29**(1), 37–45. [AT9]

1979

[16] On the second order asymptotic optimality of estimators in an autoregressive process. *Rep. Univ. Electro-Commun.* **29**(2), 213–218.

[17] On the second order asymptotic efficiency of unbiased confidence intervals, (with K. Takeuchi). *Rep. Stat. Appl. Res., JUSE* **26**(3), 99–110. [AT10]

[18] Remarks on the asymptotic efficiency and inefficiency of maximum probability estimators, (with K. Takeuchi). *Rep. Stat. Appl. Res., JUSE* **26**(4), 132–138. [AT11]

[19] Discretized likelihood methods–asymptotic properties of discretized likelihood estimators (DLEs), (with K. Takeuchi) . *Ann. Inst. Statist. Math.* **31**(1), 39–56. [AT12]

[20] Asymptotic optimality of the generalized Bayes estimator in multiparameter cases, (with K. Takeuchi). *Ann. Inst. Statist. Math.* **31**(3), 403–415. [AT13]

[21] Note on nonregular asymptotic estimation — what "nonregularity" implies, (with K. Takeuchi). *Rep. Univ. Electro-Commun.* **30**(1), 63–66. [AT14]

1980

[22] A note on prediction sufficiency (adequacy) and sufficiency, (with K. Takeuchi). *Austral. J. Statist.* 22(3), 332–335. [AT15]

[23] Third order asymptotic efficiency and asymptotic completeness of estimators, (with K. Takeuchi). *Rep. Stat. Electro-Commun.* **31**(1) 89–96. [AT16]

1981

[24] On asymptotic deficiency of estimators. *Austral. J. Statist.* **23**(1), 67–72.

[25]* *Asymptotic Efficiency of Statistical Estimators: Concepts and Higher Order Asymptotic Efficiency*, (with K. Takeuchi). Lecture Notes in Statistics, **7**, Springer-Verlag, New York-Berlin, 1981, v+242 pp.

1982

[26] Asymptotic optimality of estimators in non-regular cases. *Ann. Inst. Statist. Math.* **34**(1), 69–82.

[27] On prediction sufficiency. *Selecta Statistica Canadiana* **6**, 1–15.

[28] Second order asymptotic optimality of estimators in an autoregressive process with unknown mean. *Selecta Statistica Canadiana* **6**, 17–35.

[29] On asymptotic deficiency of estimators in pooled samples in the presence of nuisance parameters, (with K. Takeuchi). *Statistics and Decisions* **1**(1), 17–38. [AT17]

1983

[30] Asymptotic deficiency of the jackknife estimator. *Austral. J. Statist.* **25**(1), 123–129.

[31] Asymptotic deficiencies of estimators for pooled samples from the same distribution. *Probability Theory and Mathematical Statistics*, Lecture Notes in Mathematics, **1021**, Springer, Berlin, 1983, 6–14.

1984

[32] Asymptotic deficiency of the estimator of a parameter of an autoregressive process with the missing observation. *Rep. Stat. Appl. Res., JUSE* **31**(2), 1–13.

1985

[33] Estimation of a common parameter for pooled samples from the uniform distributions, (with K. Takeuchi). *Ann. Inst. Statist. Math.* **37**(1), 17–26. [AT18]

[34] Asymptotic deficiency of the jackknife estimator, II. *Statistical Theory and Data Analysis*, North-Holland, Amsterdam, 27–42.

[35] A note on the minimum variance unbiased estimation when the Fisher information is infinity, (with K. Takeuchi). *Rep. Stat. Appl. Res. JUSE* **32**(3), 17–22. [AT19]

1986

[36] Bhattacharyya bound of variances of unbiased estimators in nonregular cases, (with Puri, Madan L. and K. Takeuchi). *Ann. Inst. Statist. Math.* **38**(1), 35–44. [AT20]

[37] A note on minimum variance, (with K. Takeuchi). *Metrika* **33**(2), 85–91. [AT21]

[38] A note on optimum spacing of observations from a continuous time simple Markov process, (with K. Takeuchi). *Metrika* **33**(3/4), 217–222. [AT22]

[39]* *The Structure of Asymptotic Deficiency of Estimators.* Queen's Papers in Pure and Applied Mathematics, **75**. Queen's University Press, Kingston, Canada, iv+202 pp.

[40] On the bound of the asymptotic distribution of estimators when the maximum order of consistency depends on the parameter, (with K. Takeuchi). *Publ. Inst. Statist. Univ. Paris* **31**(1), 1–16. [AT23]

1987

[41] On the definition of asymptotic expectation, (with K. Takeuchi). *Foundations of Statistical Inference, Advances in the Statistical Sciences* **2**, D. Reidel Publishing Company, Dordrecht-Holland, 199–208. [AT24]

[42] Locally minimum variance unbiased estimator in a discontinuous density function, (with K. Takeuchi). *Metrika* **34**(1), 1–15. [AT25]

[43] Second order asymptotic comparison of estimators of a common parameter in the double exponential case. *Ann. Inst. Statist. Math.* **39**(1), 25–36.

[44] The lower bound for the variance of unbiased estimators for one-directional family of distributions, (with K. Takeuchi). *Ann. Inst. Statist. Math.* **39**(3), 593–610. [AT26]

1988

[45] Second order asymptotic efficiency in terms of asymptotic variances of the sequential maximum likelihood estimation procedures, (with K. Takeuchi). *Statistical Theory and Data Analysis II*, Elsevier Science Publishers, B.V. North Holland, 191–196. [AT27]

[46] Second and third order asymptotic completeness of the class of estimators, (with F. Hirakawa and K. Takeuchi). *Probability Theory and Mathematical Statistics*, Lecture Notes in Mathematics, **1299**, Springer, Berlin, 11–27. [AT28]

[47] Second order asymptotic optimality of estimators for a density with finite cusps. *Ann. Inst. Statist. Math.* **40**(2), 311–328.

[48] Second order asymptotic properties of the generalized Bayes estimators for a family of non-regular distributions. *Statistical Theory and Data Analysis II*, Elsevier Science Publishers, B.V. North Holland, 87–100.

1989

[49] Higher order asymptotics in estimation for two-sided Weibull type distributions, (with K. Takeuchi). *Ann. Inst. Statist. Math.* **41**(4), 725–752. [AT29]

[50] Third order asymptotic efficiency of the sequential maximum likelihood estimation procedure, (with K. Takeuchi). *Sequential Analysis* **8**(4), 333–359. [AT30]

[51] Behaviour of jackknife estimators in terms of asymptotic deficiency under true and assumed models. *J. Japan Statist. Soc.* **19**(2), 179–196.

1990

[52] First order asymptotic efficiency in semiparametric models implies infinite asymptotic deficiency, (with K. Takeuchi). *Publ. Inst. Stat. Univ. Paris* **35**(1) 3–9. [AT31]

[53] The optimality of the grouped jackknife estimator of ratio in some regression model, (with S. Kawai). *J. Japan Statist. Soc.* **20**(2), 149–157.

[54] Loss of information associated with the order statistics and related estimators in the double exponential distribution case, (with K. Takeuchi). *Austral. J. Statist.* **32**(3), 281–291. [AT32]

1991

[55] Second order asymptotic comparison of the discretized likelihood estimator with asymptotically efficient estimators in the double exponential case. *Metron* **48**(1-4), 5–17 (1991).

[56] The 3/2th and 2nd order asymptotic efficiency of maximum probability estimators in nonregular cases. *Ann. Inst. Statist. Math.* **43**(1), 181–195.

[57] Bootstrap method and empirical process, (with K. Takeuchi). *Ann. Inst. Statist. Math.* **43**(2), 297–310. [AT33]

[58] Second order asymptotic efficiency in terms of the asymptotic variance of sequential estimation procedures in the presence of nuisance parameters, (with K. Takeuchi). *Sequential Analysis* **10**(1-2), 27–43. [AT34]

[59] Asymptotic efficiency of estimators for a location parameter family of densities with the bounded support, (with K. Takeuchi). *Rep. Stat. Appl. Res., JUSE* **38**(1), 1–9. [AT35]

[60] Second order asymptotic sufficiency for a family of distributions with one-directionality. *Metron* **49**(1-4), 133–143.

[61] On the non-linear model of a fundamental biological process: An extension of the Masuyama model. *Rep. Stat. Appl. Res.*, JUSE **38**, 19–23.

[62] A definition of information amount applicable to nonregular cases, (with K. Takeuchi). *J. Comput. Inform.* **2**(1), 71–92. [AT36]

1992

[63] Higher order asymptotics and asymptotic deficiency of estimators. *Selecta Statistica Canadiana* **8**, 1–36.

[64] Unbiased estimation in sequential binomial sampling, (with K. Koike and K. Takeuchi). *Rep. Stat. Appl. Res., JUSE* **39**(4), 1–13. [AT37]

[65] Interval estimation with varying confidence levels, (with K. Takeuchi). *Metron* **50** (3-4), 3–18. [AT38]

1993

[66] The structure of the assumed model through the discretized likelihood estimator. *J. Japan Statist. Soc.* **23**(1), 19–31.

[67] Second order asymptotic bound for the variance of estimators for the double exponential distribution, (with K. Takeuchi). *Statistical Sciences and Data Analysis*. VSP Internat. Sci. Publ., Zeist (Netherlands), 375–382. [AT39]

[68] On the application of the Minkowski-Farkas theorem to sampling designs, (with K. Takeuchi). *Statistica Neerlandica* **47**(3), 221–223. [AT40]

[69] Completeness for sequential sampling plans, (with K. Koike). *Sequential Analysis* **12**(3 & 4), 211–218.

[70] Asymptotics on the statistics for a family of non-regular distributions. *Statistical Sciences and Data Analysis* (K. Matsusita et al. Eds.), VSP Internat. Sci. Publ., Zeist (Netherlands), 357–364.

1994

[71] The comparison of estimators of ratio for a regression model, (with S. Kawai). *J. Japan Statist. Soc.* **24**(2), 141–150.

[72] On the consistency of the maximum likelihood estimator through its uniform consistency, (with H. Kashima). *Statistics* **25**(4), 333–341.

[73] Second order asymptotic efficiency in terms of the risk in sequential estimation. *Selecta Statistica Canadiana* **9**, 25–38.

1995

[74] A higher order approximation to a percentage point of the non-central t-distribution. *Comm. Statist.-Simulation Comput.* **24**(3), 595–605.

[75] On the new approximation to non-central t-distributions, (with M. Sato and N. Torigoe). *J. Japan Statist. Soc.* **25**(1), 1–18.

[76] The amount of information and the bound for the order of consistency for a location parameter family of densities. *Proceedings of the 2nd Gauss Symposium. Conference B: Statistical Sciences*, Sympos. Gaussiana, de Gruyter, Berlin, 303–311.

[77] The Bhattacharyya type bound for the asymptotic variance and the sequential discretized likelihood estimation procedure. *Sequential Analysis* **14**(3), 193–204.

[78] Information inequalities for the minimax risk, (with M. Sato). *J. Japan Statist. Soc.* **25**(2), 151–158.

[79]* *Non-Regular Statistical Estimation*, (with K. Takeuchi). Lecture Notes in Statistics, **107**. Springer-Verlag, New York, 1995. viii+183 pp.

1996

[80] Loss of information of a statistic for a family of non-regular distributions. *Ann. Inst. Statist. Math.* **48**(2), 349–364.

[81] Third order efficiency implies fourth order efficiency: a resolution of the conjecture of J. K. Ghosh. *Ann. Inst. Statist. Math.* **48**(2), 365–380.

[82] Deficiency of minimum discrepancy estimators of multinomial parameters, (with H. Tanaka). *Statistics and Decisions* **14**(3), 241–251.

[83] An information inequality for the Bayes risk, (with M. Sato). *Ann. Statist.* **24**(5), 2288–2295.

[84] Asymptotic efficiency of third and fourth order. *Probability Theory and Mathematical Statistics*, World Sci. Publishing, River Edge, NJ, 1–11.

1997

[85] An information inequality bound for the asymptotic variance of sequential estimation procedures of a linearly combined parameter and its attainment. *Sequential Analysis* **16**(1), 47–63.

[86] Randomized confidence intervals of a parameter for a family of discrete exponential type distributions, (with K. Takahashi and K. Takeuchi). *Comm. Statist. - Simulation Comput.* **26**(3), 1103–1128. [AT41]

[87] A generalized binomial distribution determined by a two-state Markov chain and a distribution by the Bayesian approach, (with H. Kashima, and K. Takahashi). *Statistical Papers* **38**(1), 27–42.

[88] The existence of a test with the largest order of consistency in the case of a two-sided gamma type distribution, (with K. Takeuchi). *Metron* **55** (1-2), 93–107. [AT42]

1998

[89] A new higher order approximation to a percentage point of the distribution of the sample correlation coefficient, (with N. Torigoe). *J. Japan Statist. Soc.* **28**(1), 45–57.

[90] On the properties of statistical sequential decision procedures, (with K. Koike). *Sugaku Expositions* **11** (2), 197–213.

1999

[91] The higher order large-deviation approximation for the distribution of the sum of independent discrete random variables, (with K. Takahashi and K. Takeuchi). *Statistical Inference and Data Analysis. Comm. Statist. - Theory Methods* **28** (3-4), 705–726. [AT43]

[92] The concept of normalized deficiency and its applications. *Statistics and Decisions* **17**(4), 403–411.

[93] On the normalized deficiency of estimators. *Metron* **57** (3-4), 25–34.

2000

[94] Prediction sufficiency and sequential experimentation, (with Y. Nishihira). *Metron* **58** (3-4), 5–12.

[95] Prediction intervals for a discrete exponential family of distributions and its applications, (with E. Hida). *İstatistik* **3**(3), 58–82.

2001

[96] Information inequalities in a family of uniform distributions, (with K. Takeuchi). *Ann. Inst. Statist. Math.* **53**(3), 427–435. [AT44]

[97] A higher order large-deviation approximation for the discrete distributions, (with K. Takahashi). *J. Japan Statist. Soc.* **31**(2), 257–267.

2002

[98] Confidence intervals for the difference of means: application to the Behrens-Fisher type problem. *Statistical Papers* **43**(2), 273–284.

[99] The concept of generalized asymptotic deficiency and its application to the minimum discrepancy estimation. *Goodness-of-fit Tests and Model Validity*, *Stat. Ind. Technol.*, Birkhäuser Boston, Boston, MA, 495–503.

[100] Information inequalities for the Bayes risk for a family of non-regular distributions, (with N. Ohyauchi). *Ann. Inst. Statist. Math.* **54**(4), 805–815.

[101] On the asymptotic construction of confidence intervals. *Proc. Sympos., Res. Inst. Math. Sci., Kyoto Univ.*, **1224**, 137–159.

[102] An information inequality for the Bayes risk in a family of uniform distributions, (with N. Ohyauchi). *İstatistik* **5**(1), 1–5.

2003

[103] The information inequality in sequential estimation for the uniform case, (with K. Takeuchi). *Sequential Analysis* **22**(3), 223–232.

[104] On a family of distributions attaining the Bhattacharyya bound, (with H. Tanaka). *Ann. Inst. Statist. Math.* **55**(2), 309–317.

[105] An approximation to the generalized hypergeometric distribution, (with E. Hida). *Statistical Papers* **44**(4), 483–497.

[106]* *Joint Statistical Papers of Akahira and Takeuchi*, (with K. Takeuchi). World Scientific Publishing Co., Inc., River Edge, NJ, 2003, xxii+591 pp.

2004

[107] Weighted loss functions for set estimation and testing hypotheses, (with H. Maihara). *J. Japan Statist. Soc.* **34**(2), 189–206.

2005

[108] Sequential interval estimation of a location parameter with the fixed width in the uniform distribution with an unknown scale parameter, (with K. Koike). *Sequential Analysis* **24**(1), 63–75.

[109] The construction of combined Bayesian-frequentist confidence intervals for a positive parameter, (with A. Shimizu and K. Takeuchi), *Statistica* **65**(4), 351–365.

2006

[110] Large-deviation efficiency of first and second order. *Student* **5**(3-4), 211–219.

2007

[111] On the Pitman estimator for a family of non-regular distributions, (with N. Ohyauchi and K. Takeuchi). *Metron* **65**(1), 113–127.

[112] A Bayesian view of the Hammersley-Chapman-Robbins-type inequality, (with N. Ohyauchi). *Statistics* **41**(2), 137–144.

[113] The asymptotic bound by the Kiefer-type information inequality and its attainment, (with N. Ohyauchi). *Commun. Statist. - Theory and Meth.* **36**(11), 2049–2059.

2008

[114] The concept of amount of information and its role in non-regular estimation. (In Japanese), (The JSS Prize Lecture), *Journal of the Japan Statistical Society, Japanese Issue*, **37**(2), 329–342.

2009

[115] The structure of higher order asymptotic theory of statistical estimation. *Amer. Math. Soc. Transl.*, Ser.2, **227**, 175–197.

2010

[116] The first- and second-order large-deviation efficiency for an exponential family and certain curved exponential models. *Commun. Statist. - Theory and Methods*, **39**(8-9), 1387–1403.

2012

[117] Loss of information of a statistic for a family of non-regular distributions, II: more general case, (with H. G. Kim and N. Ohyauchi). *Ann. Inst. Statist. Math.*, **64**(6), 1121–1138.

2013

[118] A higher order approximation to a percentage point of the distribution of a noncentral t-statistic without the normality assumption, (with N. Ohyauchi and S. Kawai). *Commun. Statist. - Simulation Comput.*, **42**(9), 2086–2105.

2016

[119] Second-order asymptotic comparison of the MLE and MCLE of a natural parameter for a truncated exponential family of distributions. *Ann. Inst. Statist. Math.*, **68**(3), 469–490.

[120] Second order asymptotic comparison of the MLE and MCLE for a two-sided truncated exponential family of distributions, (with S. Hashimoto., K. Koike and N. Ohyauchi). *Commun. Statist. - Theory and Meth.*, **45**(19), 5637–5659.

[121] Second order asymptotic loss of the MLE of a truncation parameter for a two-sided truncated exponential family of distributions, (with N. Ohyauchi). *J. Japan Statist. Soc.*, **46**(1), 27–50.

[122] Second order asymptotic variance of the Bayes estimator of a truncation parameter for a one-sided truncated exponential family of distributions. *J. Japan Statist. Soc.*, **46**(1), 81–98.

2017

[123] Second order asymptotic loss of the MLE of a truncation parameter for a truncated exponential family of distributions, (with N. Ohyauchi). *Commun. Statist. - Theory and Meth.*, **46**(12), 6085–6097.

[124]* *Statistical Estimation for Truncated Exponential Families.* Springer Briefs in Statistics, JSS Research Series in Statistics, Springer.

2018

[125] The history of deepening and progress in statistical inference. (In Japanese), *Journal of the Japan Statistical Society, Japanese Issue*, **47**(2), 51–76.

[126] Asymptotic concentration probabilities of MLEs for a oTEF. (In Japanese), *RIMS Kôkyûroku* **2091**, *Kyoto University*, 140–147.