

# Curriculum Vitae

## Lajos Horváth

Professor of Mathematics, University of Utah

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## Academic Degrees

- B.S. 1981 Szeged University (Math and Comp.Sci.)
- Ph.D. 1982 Szeged University
- Candidate of Sciences (Math), 1983 Hungarian Academy of Sciences

## Employment

**1981-1985** Assistant Researcher, Szeged Univ. (Hungary)

**1985-1993** Researcher, Szeged Univ. (Hungary)

**1985-1987** Researcher, Carleton Univ. (Canada)

**1987-1988** Assoc. Professor, Univ. of Wisconsin-Madison

**1988-1992** Associate Professor, University of Utah

**1992-present** Professor, University of Utah

## Visiting Positions

**1994-1995** Univ. of Alberta and Carleton University (Sabbatical)

**2001-2002** Hungarian Academy of Sciences (Sabbatical)

**2004** Technische Universität–Graz, Austria (visiting professor)

**2005** Hong Kong University of Science and Technology (visiting scholar)

**2006** Hong Kong University of Science and Technology (visiting scholar)

**2006** Université Charles–de–Gaulle (Lille 3) (visiting professor)

**2006** Technische Universität–Graz, Austria (visiting professor)

**2007** Hong Kong University of Science and Technology (visiting scholar)

**2007** University of Sydney, Australia (visiting professor)

**2008** Hong Kong University of Science and Technology (visiting scholar)

**2008** Université Charles–de–Gaulle (Lille 3) (visiting professor)

**2015** Rinmin University, Business School, Beijing China

**2016** Hong Kong University of Science and Technology (visiting professor)

**2016** Rinmin University, Business School, Beijing China

## Research Interests/Experience

Mathematical Statistics (limit theorems, non-linear time series, nonparametric methods)

Probability Theory (local time, log densities, path properties)

Stochastic Processes (weighted approximations, invariance principles)

## Membership in Societies

Fellow of the Institute of Mathematical Statistics (1990)

### Awards

Econometric Theory Award (multa scripsit), 2007

Econometric Theory Award (plura scripsit), 2010

Best paper published in the Canadian Journal of Statistics in 2009

ISI highly cited researcher

Distinguished Author Journal of Time Series Analysis (Wiley) 2020

## Bibliography

### Books

1. An Asymptotic Theory for Empirical Reliability and Concentration Processes (with M. Csörgő and S. Csörgő), Lecture Notes in Statistics, Vol. 33, Springer Verlag, Heidelberg-New York, 1986.
2. Weighted Approximations in Probability and Statistics (with M. Csörgő), Wiley, New York, 1993.
3. Limit Theorems in Change-point Analysis (with M. Csörgő), Wiley, New York, 1997.
4. (editor) Asymptotic Methods in Stochastics (with B. Szyszkowicz) Fields Institute Publications, AMS, Providence, 2004.
5. Inference for Functional Data with Applications (with P. Kokoszka) Springer, New York, 2012.
6. Inference for Functional Data with Applications (Springer Series in Statistics, 200) (with Gregory Rice), Springer, 2024.

### Research Papers

1. On empirical Prékopa processes, Acta Sci. Math. (Szeged) 42(1980), 265–274
2. Dropping continuity and independence assumptions in random censorship models, Studia Sci. Math. Hung. 15(1980), 381–389.
3. On random censorship from the left (with S. Csorgo), Studia Sci. Math. Hung. 15(1980), 397–401.
4. Two-sample problems under random censorship. In: Transactions of the Colloquium on Non-parametric Statistical Inference, June 23–28, Budapest (Coll. Math. Soc. J. Bolyai No. 32, North-Holland) (1980), 417–433.
5. Strong approximation of some biometric estimates under random censorship (with M.D. Burke and S. Csorgo), Z. Wahrscheinlich. Verw. Gebiete 56(1981), 87–112.
6. On the Koziol-Green model for random censorship (with S. Csorgo), Biometrika 68(1981), 391–401.
7. On nonparametric regression with randomly censored data. In: Transactions of the 3rd Pannonian Symposium on Math. Statistics, Sept. 13–18, Visegrad (Birkhauser) (1981), 105–113.

8. On random censorship from the right (with S. Csorgo), *Acta Sci. Math. (Szeged)* 44(1982), 23–44.
9. On cumulative hazard processes under random censorship (with S. Csorgo), *Scand. J. Statist.* 9(1982), 13–21.
10. Statistical inference from censored samples (in Hungarian) (with S. Csorgo), *Alk. Mat. Lapok* 8(1982), 1–89.
11. Construction of confidence bands from censored samples and their application for the estimation of the survival function of patients with operated heart disease (in Hungarian). (with S. Csorgo, B. Felkai, I. Lenkehegyi and P. Pusztai). In: *Statistical and Cybernetical Methods in Medical Science*, Szeged (1982), 243–250.
12. Parameter estimation and testing composite hypotheses from censored data, In: *Transactions of the Colloquium on Limit Theorems in Probability and Statistics*, Veszprem (Coll. Math. Soc. J. Bolyai No. 36. North-Holland) (June 21–26, 1982), 587–616.
13. On weak and strong approximation of the quantile processes (with M. Csorgo, S. Csörgő and P. Revesz), In: *Proc. 7th Conference on Probab. Theory*, Brasov (Aug. 30-Sept. 4, 1983), 81–95.
14. The rate of strong uniform consistency for the product-limit estimator (with S. Csorgo), *Z. Wahrscheinlich. Verw. Gebiete* 62(1983), 411–426.
15. The rate of strong uniform consistency for the multivariate product-limit estimator, *J. Multivariate Analysis* 13(1983), 202–209.
16. On the Koziol-Green model for random censorship II (with Csorgo), *Studia Sci. Math. Hung.* 18(1983), 195–203.
17. The baboons come down from trees quite normally (with S. Csorgo), In: *Transactions of the 4th Pannonian Symposium on Math. Statistics*, (Akademiai Kiado) (1983), 95–106.
18. Density and failure rate estimation in a competing risks model (with M.D. Burke), *Sankya, Ser. A.* 46(1984), 135–154.
19. Strong approximation of renewal processes, *Stochastic Process. Appl.* 18(1984), 127–138.
20. Strong approximation of certain stopped sums, *Statist. Probab. Lett.* 2(1984), 181–185.
21. Strong and weak approximations of k-spacings processes (with E.E. Aly and J. Beirlant), *Z. Wahrscheinlich. Verw. Gebiete* 66 (1984), 461–484.
22. On random censorship from both sides, *Math Operationsforsch. Statist. Ser. Statist.* 15(1984), 581–594.
23. Approximations of m-overlapping spacings processes (with J. Beirlant), *Scand. J. Statist.* 11(1984), 225–245.
24. Strong approximation of extended renewal processes, *Ann. Probab.* 12(1984), 1149–1166.
25. Overlapping spacings. In: *Proc. 3rd Prague Symp. on Asymptotic Statistics* (with J. Beirlant) (1984), 205–211.
26. Estimation from a length-biased distribution, *Statistics and Decisions* 3(1985), 91–113.
27. Strong approximation of quantiles of the product-limit estimator (with E. E. Aly and M. Csorgo), *J. Multivariate Analysis* 16(1985), 185–210.
28. Empirical kernel transforms of parameter-estimated empirical processes, *Acta Sci. Math. (Szeged)* 48(1985), 201–213.
29. A strong nonlinear renewal theorem with applications to sequential analysis, *Scand. J. Statist.* 12(1985), 271–280.

30. Strong laws for randomly indexed U-statistics, *Math Proc. Cambridge Phil. Soc.* 98(1985), 559–567.
31. Approximation for Abel sums of independent, identically distributed random variables, *Statist. Probab. Lett.* 3(1985), 221–225.
32. Weighted empirical and quantile processes (with M. Csörgő, S. Csörgő and D.M. Mason), *Ann. Probab.* 14(1986), 31–85.
33. Normal and stable convergence of integral functionals of the empirical distribution function (with M. Csörgő, S. Csörgő and D.M Mason), *Ann. Probab.* 14(1986), 86–118.
34. Bootstrapped confidence bands for percentile lifetime (with B. Barabas, M. Csörgő and B.S. Yandell), *Ann. Inst. Stat. Math.* 38(1986), 429–438.
35. Estimation of influence functions (with M.D. Burke), *Statist. Probab. Lett.* 4(1986), 81–85.
36. Strong approximations of renewal processes, (with M. Csörgő and J. Steinebach), *C.R. Math. Rep. Acad. Sci. Canada* 8(1986), 151–154.
37. What portion of the sample makes a partial sum asymptotically stable or normal? (with S. Csörgő and D.M. Mason), *Probability Theory and Related Fields* 72(1986), 1–16.
38. Strong approximations of renewal processes and their applications, *Acta Math. Hung.* 47(1986), 13–27.
39. Confidence bands from censored samples (with S. Csorgo), *Canad. J. Statist.* 14(1986), 131–144.
40. How big must be the difference between local time and measure du voisinage of Brownian motion (with M. Csorgo and P. Revesz), *Statist. Probab. Lett.* 4(1986), 161–166.
41. Weighted empirical spacings processes (with M. Csorgo), *Canad. J. Statist.* 14(1986), 221–232.
42. Strong approximations of weighted sums of random variables, *J. London Math. Soc.* 33(1986), 567–576.
43. Stochastic random walk summability, *Math. Z.* 192(1986), 437–466.
44. Estimates for probability of ruin starting with large initial reserve (with E. Willekens), *Insurance: Mathematics and Economics* 5(1986), 285–293.
45. Approximations of weighted empirical and quantile processes (with M. Csorgo), *Statist. Probab. Lett.* 4(1986), 275–280.
46. On the passage of a random walk from generalized balls. In: *Adaptive Statistical Procedures and Related Topics* (with S. Csorgo), *IMS Lecture Note, Vol. 8*(1986), 1–17.
47. Asymptotic distributions of pontograms (with M. Csorgo), *Math. Proc. Cambridge Phil. Soc.* 101(1987), 131–139.
48. Estimation of total time on test transforms and Lorenz curves under random censorship (with M. Csörgő and S. Csorgo), *Statistics* 18(1987), 77–97.
49. P-P plots, rank processes and Chernoff-Savage theorems (with E. E. Aly and M. Csorgo), In: *New Perspectives in Theoretical and Applied Statistics* (Wiley) (1987), 135–156.
50. Sup-norm convergence of the empirical process indexed by functions and applications (with M. Csorgo, S. Csorgo, and D. M. Mason). *Probab. Math. Stat. (Wroclaw)* 7(1987), 13–26.
51. Approximation of intermediate quantile processes (with M. Csorgo), *J. Multivariate analysis* 21(1987), 250–262.
52. Invariance for renewal processes (with M. Csörgő and J. Steinebach), *Ann. Probab.* 15(1987), 1441–1460.

53. Rates of convergence of random walk summation (with M. Csorgo), *Bulletin London Math. Soc.* 19(1987), 531–536.
54. Nonparametric tests for the changepoint problem (with M. Csorgo), *J. Statist. Planning Inference* 47(1987), 1–9.
55. On the distribution of the suprema of weighted empirical processes (with M. Csörgő and J. Steinebach), (*Physica Verlag-Springer Verlag* (1987), 1–18.
56. A naive estimator of the tail index of a distribution (with M. Csörgő and P. Revesz), *Austral. J. Statist.* 29(1987), 166–178.
57. An approximation for stopped sums with applications in queueing theory (with M. Csörgő and P. Deheuvels), *Adv. Appl. Probab.* 19(1987), 674–690.
58. Convergence rates for the bootstrapped product-limit process (with B. S. Yandell), *Ann. Stat.* 15(1987), 1155–1173.
59. On the tail behaviour of quantile processes, *Stochastic Process. Appl.* 25(1987), 57–72.
60. Detecting change in a random sequence (with M. Csorgo), *J. Multivariate Analysis* 23(1987), 119–130.
61. Stability and instability of local time of random walk in random environment (with M. Csörgő and P. Revesz), *Stochastic Process. Appl.* 25(1987), 185–202.
62. Asymptotic representations of self-normalized sums (with M. Csorgo), *Probab. Math. Stat. (Wroclaw)*, 9(1988), 15–24.
63. Asymptotics for  $L_p$ -norms of kernel estimators of densities (with M. Csorgo), *Computational Statistics and Data Analysis* 6(1988), 241–250.
64. On the distributions of  $L_p$ -norms of weighted uniform empirical and quantile processes (with M. Csorgo), *Ann. Probab.* 16(1988), 142–161.
65. Convergence of the empirical and quantile distributions to Poisson measures (with M. Csorgo), *Statistics and Decisions* 6(1988), 129–136.
66. A note on strong approximations of multivariate empirical processes (with M. Csorgo), *Stochastic Process. Appl.* 28(1988), 101–109.
67. Asymptotics of conditional empirical processes (with B.S. Yandell), *J. Multivariate Analysis* 26(1988), 184–206.
68. Rate of convergence of transport process with an application to stochastic differential equations (with M. Csorgo), *Probability Theory and Related Fields* 78(1988), 379–387.
69. Invariance principles for changepoint problems (with M. Csorgo), *J. Multivariate Analysis* 27(1988), 151–168. (Reprinted in: *Multivariate Statistics and Probability* (Academic Press) (1989), 151–168.)
70. A correction to and improvement of "Strong approximations of some biometric estimates under random censorship" (with M. D. Burke and S. Csorgo), *Probability Theory and Related Fields* 79(1988), 51–57.
71. Central limit theorems for  $L_p$ -norms of density estimators, (with M. Csorgo), *Probability Theory and Related Fields* 80(1988), 269–291.
72. Nonparametric methods for changepoint problems (with M. Csorgo), In: *Handbook of Statistics* (North-Holland) Vol. 7(1988)403–425.
73. On confidence bands for the quantile function (with M. Csorgo). In: *Statistical Applications in Earth Sciences* (Geological Survey of Canada) 89–9(1989), 221–231.

74. Limit laws for averages of exponential random variables, *Math. Proc. Cambridge Phil. Soc.* 105 (1989), 381–388.
75. On the distributions of the supremum of weighted quantile processes (with M. Csorgo), *Studia Sci. Math. Hung.* 15(1990), 353–375.
76. Bootstrapped multi-dimensional product-limit process (with B.S. Yandell), *Australian J. Stat.* 30(1988), 342–358.
77. Large sample properties of kernel-type score function estimators (with M. D. Burke), *J. Statist. Planning Inference* 22(1989), 307–321.
78. On best possible approximations of local time (with M. Csorgo), *Statist. Probab. Lett.* 8(1989) 301–306.
79. The limit distributions of likelihood ratio and cumulative sum tests for a change in binomial probability, *J. Multivariate Analysis* 31(1989), 148–159.
80. Comments on "Asymptotics via empirical processes" by D. Pollard (with M. Csorgo), *Statistical Sciences* 4(1989), 360–365.
81. On confidence bands for the quantile function of a continuous distribution function (with M. Csorgo), *Limit Theorems in Probab. Stat. Coll. Math. Soc. J. Bolyai* 57(1989), 95–106.
82. A note on the rate of Poisson approximation of empirical processes, *Ann Probab.* 18(1990), 724–726.
83. Asymptotics for  $L_p$ -norms of Fourier series density estimators, *Constructive Approximations* 6(1990), 375–397.
84. Confidence bands for quantile function under random censorship (with C-J. F. Chung and M. Csorgo), *Ann. Inst. Statist. Math.* 42(1990), 21–36.
85. On the distributions for  $L_p$ -norms of weighted quantile processes (with M. Csorgo), *Annales de l'Institut Henri Poincare Probabilites et Statistiques*, 26(1990), 65–90.
86. Asymptotic tail behaviour of uniform multivariate empirical processes (with M. Csorgo), *Ann. Probab.* 18(1990), 1723–1738.
87. Asymptotic distributions of maximum likelihood tests for change in the mean (with E. Gombay), *Biometrika* 77(1990), 411–414.
88. Strong laws and limit theorems for local time of Markov processes, *Probability Theory and Related Fields* 85(1990), 413–424.
89. Central limit theorems for  $L_p$ -distances of kernel estimators of densities under random censorship (with M. Csörgő and E. Gombay), *Ann. Statist.* 19(1991), 1813–1831.
90. On  $L_p$ -norms of multivariate density estimators, *Ann. Statist.* 19(1991), 1933–1949.
91. On the asymptotics for weighted uniform multivariate empirical processes, *J. Multivariate Analysis* 36(1991), 127–143.
92. Tests for composite hypotheses with censored data (with R.A. Johnson), *Statistics and Decisions* 9(1991), 21–43.
93. Estimating the quantile-density function (with M. Csörgő and P. Deheuvels). In: *Nato Conf. on Curve Estimation*, Kluwer, Boston, 1991, 213–223.
94. Short distances on the line, *Stoch. Proc. Appl.* 39(1991), 65–80.
95. Weak convergence of the discrete scattering process, *Adv. Applied Probab.* 39(1991), 55–60.
96. Rate of convergence in limit theorems for Brownian excursions, *Stoch. Proc. Appl.* 39(1991), 55–60.

97. Strong approximations of open queueing networks, *Math. Op. Res.* 17(1992), 487- 508.
98. Strong approximation of a multi-time parameter Poisson process (with M. Csorgo). In: *Nonparametric Statistics and Related Topics*, North-Holland, Amsterdam, 1992, 365–370.
99. Invariance principles for logarithmic averages (with M. Csorgo), *Math. Proc. Cambridge. Phil. Soc.* 112(1992), 195–205.
100. A goodness-of-fit-test for exponential families (with E. Gombay), *Stat. Probab. Letters*, 15(1992), 235–239.
101. Rényi-type empirical processes (with M. Csorgo), *J. Multivariate Analysis*, 41(1992), 338–358.
102. On the weighted asymptotics of partial sums and empirical processes of independent random variables (with M. Csorgo, Q-M Shao and B. Szyszkowicz) In: *50 years after Doeblin*, *Contemporary Mathematics*, 149 (1992), 139–148.
103. Change in autoregressive processes, *Stoch. Proc. Appl.* 44 (1993), 221–242.
104. Asymptotics for global measures of accuracy of splines, *J. Approximation Theory*, 73 (1993), 270–287.
105. Convergence of integrals of uniform empirical and quantile processes (with M. Csörgő and Qi-Man Shao), *Stoch. Proc. Appl.* 45 (1993), 283–294.
106. The maximum likelihood method for testing changes in the parameters of normal observations, *Ann. Statist.* 21 (1993), 671–680.
107. A note on the law of iterated logarithm for Abel sums, *C. R. Math. Rep. Acad. Sci. Canada* 15 (1993), 213–217.
108. A note on dichotomy theorems for integrals of stable processes (with Qi-Man Shao), *Stat. Probab. Letters* 19 (1994) 45–49.
109. Limit theorems for change in linear regression (with E. Gombay), *J. Multivariate Analysis* 48 (1994) 43–69.
110. An application of the maximum likelihood test to the change-point problem (with E. Gombay), *Stoch. Proc. Appl.* 50(1994), 161–171.
111. Bahadur-Kiefer representations on the tails (with M. Csorgo), *Recent Adv. in Stat. Prob.* (1994), 255–261 .
112. A note on the law of large numbers for directed random walk in random environments (with Qi-Man Shao), *Stoch. Proc. Appl.* 54(1994), 275–279.
113. Some applications of the likelihood method in change-point models, *Proc. 12th Prague Conference* (1994), 106–108.
114. Limit theorems for Fisher-score change processes (with E. Parzen). In: *Change-Point Problems*, *IMS Lecture Notes-Monographs Series*, 157–169.
115. Kac's representation from an asymptotic viewpoint, *J. Statist. Planning Inference*, 46(1995), 27–45.
116. Limit theorems for the union-intersection test (with Qi-Man Shao), *J. Statist. Planning Inference*, 44(1995), 133–148.
117. On the distance between smoothed empirical and quantile processes (with M. Csörgő), *Ann. Stat.* 23(1995), 113–131.
118. Detecting changes in linear regressions, *Statistics*, 26(1995), 189–208.
119. Asymptotics for directed random walks in random environments (with Qi-Man Shao), *Acta Math. Hung.* 68(1995) 21–36.

120. Testing for changes in multinomial observations: the Lindisfarne Scribes problem (with M. Serbinowska), *Scand. J. Statist.*, 22(1995), 371–384.
121. An application of  $U$ -statistics to change-point analysis (with Edit Gombay), *Acta Sci. Math (Szeged)*, 60(1995), 345–357.
122. Weight functions and pathwise local central limit theorems (with Davar Khoshnevisan), *Stoch. Proc. Appl.*, 59(1995), 105–123.
123. Limit theorems for the maximum of standardized Cesáro and Abel sums (with Qi-Man Shao), *J. Statistical Research*, 29(1995), 37–50.
124. A strong approximation for logarithmic averages (with Davar Khoshnevisan), *Studia Math. Hung.*, 31(1996) 187–196.
125. A limit theorem for standardized random walk summation (with Qi-Man Shao), *Bulletin London Math Soc.*, 28(1996), 425–432.
126. Approximations for the time of change and the power function in change-point models (with Edit Gombay), *J. Stat. Plan. Inf.*, 52(1996), 43–66.
127. Estimators and tests for change in variances (with E. Gombay and M. Hušková). *Statistics and Decisions*, 14(1996), 145–159.
128. A note on the change-point problem for angular data (with M. Csörgő), *Stat. Probab. Letters*, 27(1996), 61–65.
129. On the rate of approximations for maximum likelihood test in change-point models (with E. Gombay). *J. Multivariate Analysis*, 56(1996), 120–152.
130. Darling–Erdős–type theorems for sums of Gaussian variables with long range dependence (with Qi-Man Shao), *Stoch. Proc. Appl.* 63(1996), 117–137.
131. Large deviations and law of the iterated logarithm for partial sums normalized by the largest absolute observation (with Qi-Man Shao), *Ann. Prob.* 24(1996), 1368–1387.
132. Between local and global logarithmic averages (with I. Berkes), *Stat. Probab. Letters*, 30(1996), 369–378.
133. Limit theorem for maximum of standardized  $U$ -statistics with an application (with Qi-Man Shao), *Ann. Stat.* 24(1996), 2266–2279.
134. Detection of changes in linear sequences, *Ann. Inst. Math. Statist.* 49(1997), 271–283.
135. Almost sure summability of partial sums (with M. Csörgő and Qi-Man Shao), *Studia Math. Hung.* 33(1997), 43–74.
136. Almost sure invariance principles for logarithmic averages (with I. Berkes), *Studia Math. Hung.* 33(1997), 1–24.
137. Estimators for the time of change in linear models (with M. Hušková and M. Serbinowska), *Statistics* 29(1997), 109–130.
138. The effect of long-range dependence on change-point estimators (with P. Kokoszka), *J. Stat. Plan. Inf.* 64(1997), 57–81.
139. An application of the likelihood method to change–point detection (with E. Gombay), *Environmetrics* 8(1997), 459–467.
140. Integral tests for suprema of Kiefer processes with application (with M. Csörgő and B. Szyszkowicz), *Statistics and Decisions* 15(1997), 365–377.



141. Almost sure central limit theorems under minimal conditions (with I. Berkes and E. Csáki) *Stat. Probab. Letters* 37(1998), 67–76.
142. Limit distributions of directionally reinforced random walks (with Qi-Man Shao), *Adv. Math.* 134(1998), 367–383.
143. Approximations for quadratic forms and Whittle’s estimates (with Qiman Shao) In: *Prague Stochastics ’98* (Union, 1998) 237–241.
144. Limit theorems for logarithmic averages of random vectors (with I. Berkes), *Mathematische Nachrichten* 195(1998), 5–16.
145. Diffusion approximation for random walks on anisotropic lattices, *J. Appl. Probab.* 35(1998) 206–212.
146. Logarithmic averages of stable random variables are asymptotically normal (with I. Berkes and D. Khoshnevison), *Stoch. Proc. Appl.* 77(1998), 35–51.
147. Tests for changes under random censorship. *J. Stat. Plan. Inf.* 69(1998) 229–243.
148. Parameter estimated standardized  $U$ -statistics (with E. Gombay),  
In: *Asymptotic Methods in Probability and Statistics* (North–Holland, 1998) 563–576.
149. On the best approximation for bootstrapped empirical processes (with Josef Steinebach), *Stat. Probab. Letters* 41(1999) 117–122.
150. Testing for changes in multivariate dependent observations with an application to temperature changes (with P. Kokoszka and J. Steinebach), *J. Multivariate Analysis* 68(1999) 96–119.
151. Limit theorems for quadratic forms with an application to Whittle’s estimate (with Qi–Man Shao), *Ann. Applied. Prob.* 9(1999) 146–187.
152. Change–points and bootstrap (with E. Gombay) *Environmetrics* 10(1999) 725–736.
153. Limit theorems for logarithmic averages of fractional Brownian motions (with I. Berkes) *J. Theoretical Probab.* 12(1999) 985–1009.
154. Limit theorems for short distances in  $R^m$  (with V.R. Eastwood), *Stat. Probab. Letters* 45(1999) 261–268.
155. Approximations for bootstrapped empirical processes (with M. Csörgő and P. Kokoszka) *Proc. Amer. Math. Soc.* 128(2000) 2457–2464.
156. Approximations for hybrids of empirical and partial sums processes *J. Stat. Plan. Inf.* 88(2000) 1–18.
157. Approximations for weighted bootstrap processes with an application (with P. Kokoszka and J. Steinebach) *Stat. Probab. Letters* 48(2000) 59–70.
158. Limit theorems for kernel–type estimators for the time of change (with I. Grabovsky and M. Hušková) *J. Stat. Plan. Inf.* 89(2000) 25–56.
159. Testing for changes in the mean or variance of a stochastic process under weak invariance (with J. Steinebach), *J. Stat. Plan. Inf.* 91(2000) 365–376.
160. Strong laws for  $L_p$ -norms of empirical and related processes (with I. Berkes, Q. Shao and J. Steinebach) *Periodica Math. Hung.* 41(2000) 35–69.
161. On the estimation of the spread rate for a biological population (with J. Clark and M. Lewis) *Stat. Probab. Letters* 51(2001) 225–234.
162. The logarithmic average of sample extremes is asymptotically normal (with I. Berkes) *Stoch. Proc. Appl.* 91(2001) 77–98.

163. Change–point detection in long–memory processes J. Multivariate Analysis 78(2001) 218–234.
164. Large sample theory for linear functionals of squared residual correlations of the ARCH(p) model (with P. Kokoszka) Econometric Theory 17(2001) 283–295.
165. Change–point detection in angular data (with I. Grabovsky) Ann. Inst. Stat. Math 53(2001) 552–566.
166. Invasion by extremes (with J.S. Clark and M. Lewis) American Naturalist 157(2001) 537–554.
167. Strong approximation for the empirical process of a GARCH sequence (with I. Berkes) Ann. Applied Probab. 11(2001) 789–809.
168. Central limit theorems for logarithmic averages (with I. Berkes and X. Chen) Periodica Math. Hung. 38(2001) 79–96.
169. Empirical processes of the squared residuals of an ARCH sequence (with P. Kokoszka and G. Teyssi re) Ann. Statist. 29(2001) 445–469.
170. Rates of convergence for  $U$ –statistic processes and their bootstrapped versions (with E. Gombay) J. Stat. Plan. Inf. 102(2002) 247–272.
171. Change–point detection with non–parametric regression (with P. Kokoszka) Statistics 36(2002) 9–31.
172. Approximations for randomly accelerated motions In: Limit Theorems in Probability and Statistics II (I. Berkes, E. Cs aki and M. Cs org o, Eds) pp. 155–173.
173. Kernel type estimator for gradual changes (with M. Hu skov a) In: Limit Theorems in Probability and Statistics II (I. Berkes, E. Cs aki and M. Cs org o, Eds) pp. 175–187.
174. Empirical processes of residuals (with I. Berkes) In: Empirical Process Techiques for Dependent Data (H. Dehling, M. Mikosch and M. Sorensen, Eds.) Birkh user, Basel, 2002, 195–209.
175. Change point detection based on empirical quantiles (with A. Jach and P. Kokoszka) In: Statistical Data Analysis Based on the  $L_1$ -Norm and Related Methods (Y. Dodge, Ed.) Birkh user, Basel, 2002, pp. 229–240.
176. GARCH processes: structure and estimation (with I. Berkes and P. Kokoszka) Bernoulli 9(2003) 201–227.
177. Limit results for the empirical process of squared residuals in GARCH models (with I. Berkes) Stoch. Proc. Appl. 105(2003) 271–298.
178. Asymptotics for GARCH squared residual correlations (with I. Berkes and P. Kokoszka) Econometric Theory 19(2003) 515–540.
179. Estimation of the moment index of a GARCH(1,1) sequence (with I. Berkes and P. Kokoszka) Econometric Theory 19(2003) 565–586.
180. Asymptotic results for long memory LARCH sequences (with I. Berkes) Annals of Applied Probability 13(2003) 641–668.
181. The rate of consistency of the quasi–maximum likelihood estimator (with I. Berkes) Stat. Probab. Letters 61(2003) 133–143.
182. A bootstrap approximation to a unit root test statistic for heavy–tailed observations (with P. Kokoszka) Stat. Probab. Letters 62(2003), 163–173.
183.  $L_p$ –estimators in ARCH models (with F. Liese) J. Stat. Planning Inf. 119(2003) 277–310.
184. Approximations for the maximum of stochastic processes with drift (with I. Berkes) Kybernetika 39(2003) 299–306.

185. Approximations for the maximum of a vector-valued stochastic process with drift (with Alexander Aue) *Periodica Math. Hung.* 47(2003) 1–15.
186. Asymptotics of the  $L_p$ -norms of density estimators in the first order autoregressive models (with R. Zitikis) *Stat. Probab. Letters* 66(2004), 91–104.
187. A weighted goodness-of-fit test for GARCH(1,1) specifications (with I. Berkes and P. Kokoszka) *Lietuvos Matematikos Rinkiny (Lithuanian Mathematical Journal)* 44(2004) 3–22.
188. Applications of permutations to the simulations of critical values (with I. Berkes, M. Hušková and J. Steinebach) *J. Nonparametric Statistics* 16(2004), 197–216.
189. The efficiency of the estimators of the parameters in GARCH processes (with I. Berkes) *Ann. Statist.* 32(2004) 633–655.
190. Bootstrap specification tests for ARCH based on the empirical process of squared residuals (with P. Kokoszka and G. Teyssi re) *Journal of Statistical Computation and Simulation* 74(2004) 469–485.
191. Delay time in sequential detection of change (with Alexander Aue) *Stat. Probab. Letters* 67(2004) 221–231.
192. Monitoring changes in linear models ( with M. Hušková, P. Kokoszka and J. Steinebach) *J. Stat. Planning Inf.* 126(2004) 225–251.
193. Sequential change-point detection in GARCH( $p, q$ ) models (with I. Berkes, E. Gombay and P. Kokoszka) *Econometric Theory* 20(2004) 1140–1167.
194. Probabilistic and statistical properties of GARCH processes (with I. Berkes and P. Kokoszka) *Asymptotic Methods in Stochastics (Fields Institute Communications, 2004) AMS, Providence*, pp. 409–429.
195. Testing for parameter constancy in GARCH( $p, q$ ) models (with I. Berkes and P. Kokoszka) *Stat. Probab. Letters* 70(2004) 263–273.
196. Testing for changes using permutations of U-statistics (with M. Hušková) *J. Statistical Planning and Inf.* 128(2005) 351–371.
197. Near integrated GARCH sequences (with I. Berkes and P. Kokoszka) *Ann. Applied Probab.* 15(2005) 890–913.
198. Almost sure convergence of the Bartlett estimator (with I. Berkes, P. Kokoszka and Qi-Man Shao) *Periodica Math. Hung.* 31(2005) 11–25.
199. Estimation in random coefficient autoregression models (with A. Aue and J. Steinebach) *J. Time Series Analysis* 27(2006) 61–76.
200. Asymptotic distribution of the McFadden statistic for stochastic dominance (with P. Kokoszka and R. Zitikis) *J. Econometrics*
201. On discriminating between long-range dependence and changes in the mean (with I. Berkes, P. Kokoszka and Qi-Man Shao) *Annals of Statistics* 34(2006) 1140–1165.
202. Convergence of integral functionals of stochastic processes (with I. Berkes) *Econometric Theory* 22(2006) 304–322.
203. Monitoring constancy of variance in conditionally heteroskedastic time series (with P. Kokoszka and A. Zhang) *Econometric Theory* 22(2006) 373–402.
204. Testing goodness of fit based on densities of GARCH innovations (with Ri ardas Zitikis) *Econometric Theory* 22(2006) 457–482.
205. Discriminating between level shifts and random walks: a delay time approach (with A. Aue and Zs. Horv th) *Prague Stochastics* 2006, pp. 73–80.

206. Strong approximation for the sums of squares of augmented GARCH sequences (with A. Aue and I. Berkes) *Bernoulli* 12(2006) 583–608.
207. Change–point monitoring in linear models with conditionally heteroskedastic errors (with A. Aue, M. Hušková and P. Kokoszka) *Econometrics Journal* 9(2006) 373–403.
208. Sample and implied volatility in GARCH models (with P. Kokoszka and R. Zitikis) *Journal of Financial Econometrics* 4(2006) 617–635.
209. A limit theorem for mildly explosive autoregression with stable errors (with A. Aue) *Econometric Theory* 23(2006) 201–220.
210. On sequential detection of parameter changes in linear regression (with P. Kokoszka and J. Steinebach) *Statistics & Probability Letters* 77(2007) 885–895.
211. Rescaled range analysis in the presence of stochastic trend (with Alexander Aue and Josef Steinebach) *Statistics & Probability Letters* 77(2007) 1165–1175.
212. Limit theorems for permutations of empirical processes (with Qi–Man Shao) *Stochastic Processes and Their Applications* 117(2007) 1870–1888.
213. A note on the existence of solutions to a stochastic recurrence equation (with A. Aue and I. Berkes) *Acta Sci. Math. (Szeged)* 73(2007) 767–779.
214. Selection from a stable box (with A. Aue and I. Berkes) *Bernoulli* 14(2008) 125–139.
215. Ratio tests for change point detection (with Zs. Horváth and M. Hušková) *IMS Collections* 1(2008) 293–304.
216. Confidence bands for ROC curves (with Zs. Horvath and W. Zhou) *Journal of Statistical Planning and Inference* 138(2008) 1894–1904.
217. Sample autocovariances of long memory time series (with P. Kokoszka) *Bernoulli* 14(2008) 405–418.
218. On the performance of the fluctuation test for structural change (with M. Kühn and J. Steinebach) *Sequential Analysis* 27(2008) 126–140.
219. Testing for changes in polynomial regression (with A. Aue, Marie Hušková) *Bernoulli* 14(2008) 637–660.
220. Asymptotic properties of nonparametric frontier estimators (with Zs. Horváth and W. Zhou) *Econometric Theory* 24(2008) 1607–1627.
221. Distributional analysis of empirical volatility in GARCH processes (with P. Kokoszka and R. Zitikis) *Journal of Statistical Planning and Inference* 138(2008) 3578–3589.
222. The functional central limit theorem for a family of GARCH observations with applications (with I. Berkes and S. Hörmann) *Statistics & Probab. Letters* 78(2008) 2725–2730.
223. Monitoring shifts in mean: asymptotic normality of stopping times (with A. Aue, P. Kokoszka and J. Steinebach) *TEST* 17(2008) 515–530.
224. On distinguishing between random walk and changes in the mean alternatives (with A. Aue, Marie Hušková and S. Ling) *Econometric Theory* 25 (2009) 411–441.
225. Testing for changes in the covariance structure of linear processes (with I. Berkes and E. Gombay) *Journal of Statistical Planning and Inference* 139(2009) 2044–2063.
226. Extreme value theory for stochastic integrals of Legendre polynomials. (with A. Aue and Marie Hušková) *J. Multivariate Analysis* 100(2009), 1029–1043.
227. Delay times of sequential procedures for multiple linear time series regression models (with A. Aue and M. Reimherr) *J. Econometrics* 149(2009), 174–190.

228. Estimation in nonstationary random coefficient autoregressive models (with I. Berkes and S. Ling) *J. Time Series Analysis* 30(2009), 395–416.
229. Break detection in the covariance structure of multivariate nonlinear time series models (with A. Aue, S. Hörmann and M. Reimherr) *Annals of Statistics* 37(2009), 4046–4087.
230. Estimation of a change–point in the mean function of functional data (with A. Aue, R. Gabrys and P. Kokoszka) *J. Multivariate Analysis* 100(2009) 2254–2269.
231. Detecting changes in the mean of functional observations (with I. Berkes, P. Kokoszka and R. Gabrys) *Journal of the Royal Statistical Society Ser. B* 70(2009) 927–946.
232. Effect of aggregation on estimators in AR(1) sequences (with R. Leipus) *Test* 18(2009) 546–567.
233. Sequential tests and change detection in the covariance structure of weakly stationary time series (with E. Gombay) *Communications in Statistics (S. Zacks Festschrift)* 38(2009) 2872–2883.
234. Two sample inference in functional linear models (with P. Kokoszka and M. Reimherr) *Canadian J. Statistics* 37(2009) 571–591.
235. Linearity testing for a general nonlinear AR(1) model with a nuisance parameter (with C. Francq and J. –M. Zakoian) *Econometric Theory* 26(2010) 965–993.
236. On functional versions of the arc–sine law (with I. Berkes and S. Hörmann) *Journal of Theoretical Probability* 23(2010) 109–126.
237. Non–central limit theorems for random selections (with I. Berkes and J. Schauer) *Probability Theory and Related Fields* 147(2010) 449–479.
238. Testing the stability of the functional autoregressive processes (with M. Hušková and P. Kokoszka) *J. Multivariate Analysis* 101(2010) 352–367.
239. Permutation and bootstrap statistics under infinite variance (with I. Berkes and J. Schauer) *Dependence in Probability and Statistics (Doukhan, P.; Lang, G.; Surgailis, D.; Teyssi re, G., Eds.) Proceedings of 2008 STATDEP. Lecture Notes in Statistics, Springer Verlag, Berlin, pp. 1–19.*
240. Tests for serial correlation in functional linear model (with R. Gabrys and P. Kokoszka) *Journal of the American Statistical Society* 106(2010) 1113–1125.
241. Asymptotics of trimmed CUSUM statistics (with I. Berkes and J. Schauer) *Bernoulli* 17(2011) 1344–1367.
242. Quasi–likelihood estimation in stationary and nonstationary autoregressive models with random coefficients (with A. Aue) *Statistica Sinica* 21(2011), 973–999.
243. Sequential stability procedures for functional data setups. In: *Recent Advances in Functional Data Analysis and Related Topics, Contrib. Statist., Physica-Verlag/Springer, Heidelberg, 2011, pp. 33–39.*(with A. Aue, S. Hörmann and M. Hušková)
244. Testing for structural change of AR model to threshold AR model (with I. Berkes, S. Ling and J. Schauer) *J. Time Series Analysis* 32(2011) 547–565.
245. Merits and drawbacks of variance targeting in GARCH models (with C. Francq and J.-M. Zakoian) *J. Financial Econometrics* 9(2011) 619–656.
246. The central limit theorem for sums of trimmed variables with heavy tails *Stochastic Processes and Their Applications* (with I. Berkes) 122(2012), 449–465.
247. Testing for stability in trending regression (with A. Aue and M. Hušková) *J. Econometrics* 168(2012) 367–381.

248. Asymptotic behavior of trimmed sums (with I. Berkes and J. Schauer) *Stochastics and Dynamics* **12**(2012) 1–14.
249. On the reaction time of moving sum detectors (with A. Aue, J. Steinebach and M. Kühn) *Journal of Statistical Planning and Inference* **141**(2012) 2271–2 288.
250. Sequential testing for the stability of portfolio betas (with A. Aue, S. Hörmann, M. Hušková and J. Steinebach) *Econometric Theory* **28**(2012), 804–837.
251. Detecting changes in functional linear models (with R. Reeder) *Journal of Multivariate Analysis* **111**(2012) 310–334.
252. Change–point detection in panel data (with Marie Hušková) *Journal of Time Series Analysis* **33**(2012), 631–648.
253. Weak invariance principles for sums of dependent random functions (with István Berkes and Gregory Rice) *Stochastic Processes and Their Applications* **123**(2013), 385–403.
254. Estimation of the mean of functional time series and a two sample problem (with P. Kokoszka and R. Reeder) *Journal of the Royal Statistical Society* **75**(2013), 103–122.
255. Structural breaks in time series (with A. Aue) *Journal of Time Series Analysis* **23**(2013), 1–16.
256. Darling–Erdős limit results for change–point detection in panel data (with Julian Chan and Marie Hušková) *Journal of Statistical Planning and Inference* **143**(2013), 955–970.
257. Testing the equality of covariance operators in functional samples (with S. Fremdt, P. Kokoszka and J. Steinebach) *Scandinavian Journal of Statistics* **40**(2013), 138–152.
258. A functional version of the ARCH model (with S. Hörmann and R. Reeder ) *Econometric Theory* **29**(2013), 267–288.
259. Change point for multinomial data using phi–divergence test statistics (with Batsidis, A., Martín, N., Pardo, L. and Zografos, K.) *Journal of Multivariate Analysis* **118**(2013), 53–66.
260. Test of independence for functional data (with M. Hušková and G. Rice) *Journal of Multivariate Analysis* **117**(2013), 100–119.
261. A test of significance in functional quadratic regression (with Ron Reeder) *Bernoulli* **19**(2013), 2120–2151.
262. Stationarity of functional time series (with P. Kokoszka and G. Rice) *Journal of Econometrics* **179**(2014), 66–82.
263. Functional data analysis with increasing number of projections (with S. Fremdt, P. Kokoszka and J.G. Steinebach) *Journal of Multivariate Analysis* **124**(2014), 313–332.
264. On the central limit theorem for modulus trimmed sums (with A. Bazarova and I. Berkes) *Statistics & Probability Letters* **86**(2014), 61–67.
265. Trimmed stable AR(1) processes (with A. Bazarova and I. Berkes) *Stochastic Processes and Their Applications* **124**(2014) 3441–3462.
266. Extensions of some classical methods in change point analysis (with discussions) (with G. Rice) *TEST* **23**(2014), 219–290.
267. Dependent functional linear models with applications to monitoring structural change (with A. Aue, S. Hörmann and M. Hušková) *Statistica Sinica* **24**(2014), 1043–1073.
268. Limit laws in transaction-level asset price models (with A. Aue, C. Hurvich and Ph. Soulier) *Econometric Theory* **30**(2014), 536–579.

269. Testing equality of means when the observations are from functional time series. *Journal of Time Series Analysis* **36**(2015), 84–108. (with G. Rice)
270. Testing for independence between functional time series. *Journal of Econometrics* (with G. Rice) **189**(2015), 371–382.
271. A survey of functional data analysis and the functional analysis of variance problem. *Revista Matemática Complutense* **28**(2015), 505–548. (with Gregory Rice)
272. Change point detection with stable AR(1) errors. *Asymptotic Laws and Methods in Stochastics* Fields Institute Communications Volume 76, 2015, pp. 179–193. (with Alina Bazarova and István Berkes)
273. Variance targeting estimation of multivariate GARCH models *Journal of Financial Econometrics* **14**(2016), 353–382. (with C. Francq and J.-M. Zakoian)
274. On the extremal theory of continued fractions *Journal of Theoretical Probability* **29**(2016), 248–266.(with A. Bazarova and I. Berkes)
275. Adaptive bandwidth selection in the long run covariance estimator of functional time series. *Computational Statistics and Data Analysis* **100**(2016), 676–693. (G. Rice and S. Whipple)
276. Statistical inference in a random coefficient panel model. *Journal of Econometrics* **193**(2016), 54–75. (with L. Trapani)
277. On the asymptotic normality of kernel estimators of the long run covariance of functional time series. *Journal of Multivariate Analysis* **144**(2016), 150–175. (with István Berkes and Gregory Rice)
278. Functional generalized autoregressive conditional heteroscedasticity. *Journal of Time Series Analysis* **38**(2017), 3–21. (with Alexander Aue and Daniel Pellatt)
279. Change point tests in functional factor models with application to yield curves *Econometrics Journal* **20**(2017), 373–403. (with Patrick Bardsley, Piotr Kokoszka and Gabriel Young)
280. Estimation of the time of change in panel data. *Econometric Theory* **33**(2017), 366–412. (with Marie Hušková Gregory Rice and Jia Wang)
281. Detecting at–most– $m$ –changes in linear regression models. *Journal of Time Series Analysis*. **38**(2017), 552–590. (with W. Pouliot and S. Wang)
282. Change point detection in heteroscedastic time series *Econometrics & Statistics*. **20**(2017), 86–117. (with Tomasz Górecki and Piotr Kokoszka)
283. Testing normality of functional time series. *Journal of Time Series Analysis*. **39**(2018), 471–487. (with Tomasz Górecki, Siegfried Hörmann and Piotr Kokoszka)
284. Empirical eigenvalue based testing for structural breaks in linear panel data models. *Journal of Multivariate Analysis* **169**(2019), 138–165. (with Greg Rice)
285. Structural breaks in panel data: large number of panels and short length of time series. *Econometric Reviews* **38**(2019), 828–855. (with J. Antoch, J. Hanousek, M. Hušková and S. Wang)
286. Testing for randomness in a random coefficient autoregression model. *Journal of Econometrics* **209**(2019), 338–352. (with Lorenzo Trapani)
287. A study of data–driven momentum and disposition effects in Chinese stock market by functional data analysis. *Review of Quantitative Finance and Accounting* **54**(2020), 335–358. (with Ruanmin Cao, Zhenya Liu and Yuqian Zhao)
288. Change point detection in time varying correlation structure. *Journal of Business and Economic Statistics* **38**(2020), 340–349 (with Marco Barassi and Yuqian Zhao)

289. A new class of change point test statistics of Rényi type. *Journal of Business and Economic Statistics* **38**(2020), 570–579. (with Curtis Miller and Gregory Rice)
290. A functional time series analysis of forward curves derived from commodity futures. *International Journal of Forecasting* **36**(2020), 646–665. (with Zhenya Liu, Gregory Rice and Shixuan Wang)
291. Sequential monitoring for changes from stationarity to mild non-stationarity. *Journal of Econometrics* **215**(2020), 209–238(with Zhenya Liu, Gregory Rice and Shixuan Wang)
292. Tests of normality of functional data. *International Statistical Review* **88**(2020), 677–699. (with Tomasz Górecki and Piotr Kokoszka)
293. Testing normality of data on a spatial grid. *Journal of Multivariate Analysis* **179**(2020), 1–14. (with Piotr Kokoszka and Shixuan Wang)
294. Time-varying beta in functional factor models: evidence from China. *North American Journal of Economics and Finance* **54**(2020), 101283. (with Li, Bo, Li, Hemei and Liu, Zhenya)
295. Some remarks on the Nelson–Siegel model. In: *Functional and High-Dimensional Statistics and Related Fields*, Contributions to Statistics, Springer, 2020, pp. 131–135.
296. Detecting early or late changes in linear models with heteroscedastic errors. *Scandinavian Journal of Statistics* **48**(2021)577–609. (with Curtis Miller and Gregory Rice)
297. Monitoring for a change point in a sequence of distributions. *Annals of Statistics* **49**(2021), 2271–2291. (with Piotr Kokoszka and Shixuan Wang)
298. Sequential monitoring of changes in dynamic linear models applied to the US housing market. *Econometric Theory* **38**(2022), 209–272. (with Zhenya Liu and Shanglin Lu)
299. Change point analysis of covariance functions: a weighted cumulative sum approach *Journal of Multivariate Analysis* (with Gregory Rice and Yuqian Zhao) **189**(2022) 104877.
300. Detecting common breaks in the means of high dimensional cross-dependent panels *Econometrics Journal* (with Zhenya Liu, Gregory Rice and Yuqian Zhao) **25**(2022), 362–383.
301. Statistical identification the different phases of stock market bubbles *Finance Research Letters* **46**(2022), 102366. (with Zhenya Liu and Hemei Li)
302. Trimmed least square estimators for stable AR(1) processes *Mathematica Pannonica* **28**(2022), 16–23. (with Alina Bazarova and István Berkes)
303. Limit results for  $L^p$  functionals of weighted CUSUM processes. In: *Trends in Mathematical, Information and Data Sciences*, Studies in Systems, Decision and Control Sciences, 445. Springer, 2022, pp. 51–62. (with Gregory Rice)
304. Inference in functional factor models with applications to yield curve. *Journal of Time Series Analysis* **43**(2022), 872–894. (with Piotr Kokoszka, Jeremy Vanderdoes and Shixuan Wang)
305. Changepoint detection in heteroskedastic random coefficient autoregressive models. *Journal of Business and Economic Statistics* **41**(2023), 1300–1314. (with Lorenzo Trapani)
306. Testing stability in functional event observations with an application to IPO performance. *Journal of Business and Economic Statistics* **41**(2023), 1262–1273. (with Gregory Rice, Zhenya Liu, Shixuan Wang and Yaosong Zhan)
307. Testing for changes in linear models using weighted residuals *Journal of Multivariate Analysis* **198**(2023), 105210 (with Gregory Rice and Yuqian Zhao)
308.  $L_p$ -functionals for change point detection in random coefficient autoregressive models. *Statistics & Probability Letters* **201**(2023), 109829 (with Lorenzo Trapani)



309. Breaks in term structures: evidence from the oil future markets. *International Journal of Finance and Economics* 2023, 1–25. (with Zhenya Liu, Curtis Miller and Weiqing Tang) DOI: 10.1002/ijfe.2777
310. Change point detection in high dimensional data with U statistics. *TEST* (with B. C. Boniece and P. M. Jacobs) <https://doi.org/10.1007/s11749-023-00900-y>
311. Comments on “Shape-based functional data analysis” by Wu, Huang and Srivastava. *TEST* In press.
312. The maximally selected likelihood ratio test in random coefficient models. *Econometrics Journal* (with Lorenzo Trapani and Jeremy Vanderdoes) Accepted for publication
313. Variable selection based testing for parameter changes in regression with autoregressive dependence. *Journal of Business and Economic Statistics* (with P. Kokoszka and S. Lu) accepted for publication

### Submitted for Publication

1. Detecting multiple change points in linear models. (with G. Rice and Y. Zhao)
2. On changepoint detection in functional data using empirical energy distance. (with B. C. Boniece and L. Trapani)
3. Real-time monitoring with RCA models. (with L. Trapani)
4. Change point detection in the distribution of the errors in dynamic linear models (with Z. Liu, S. Wang and Y. Zhang)
5. Sequential monitoring for changes in semiparametric risk models. (E. Lazar, Z. Liu, S. Wang and X. Xue)

### In Progress

1. Change point detection in graphs (with L. Trapani)
2. Detecting changes in high dimensional data with energy distance. (with B. C. Boniece)
3. Changes in GARCH(1,1) processes. (with Shixuan Wang and Yaosong Zhan)
4. Change point detection in dependent vectors with degenerate U-statistics
5. Monitoring changes in distributions with U-statistics

### Associate Editor of Research Journals

1988–2007 Statistics and Probability Letters

1995–2000 Journal of Statistical Planning and Inference

2000–2003 Coordinating Editor Journal of Statistical Planning and Inference

2004–2019 Advisory Editor Journal of Statistical Planning and Inference

2008–2013 Editorial Board member, IMS Lecture Notes and Monographs

2008–present Journal of Financial Time Series

2019–present Revista Matematica Complutense

2019–2020 Guest Editor, Scandinavian Journal of Statistics

2021–2024 TEST (Journal of the Spanish Statistical Society)

2020–2023 Statistica Sinica

2021–2024 Journal of Multivariate Analysis

### **Contributions at Conferences, Workshops, etc.**

1980 Budapest (Hungary), Nonparametric Statistical Inference

1981 Visegrad, (Hungary), 3rd Pannonian Symposium on Math. Statistics.

1981 Wroclaw (Poland), European Meeting Stat.

1982 Veszprem (Hungary), Limit Theorems in Probability and Statistics.

1982 Szeged (Hungary), Statistical and Cybernetical Methods in Medical Sciences.

1983 Leuven (Belgium), 3rd Meeting of Young European Statisticians.

1983 Kutna Hora (Czechoslovakia), 3rd Prague Symposium on Asymptotic Statistics.

1985 London (Canada) Department of Statistics and Act. Sci. University of Western Ontario.

1985 Montreal (Canada), Atelier d'expression aleatoire, University de Montreal.

1985 Vancouver (Canada) Department of Statistics, University of British Columbia.

1985 Edmonton (Canada), Department of Statistics and Applied Probability, University of Alberta.

1985 Calgary (Canada), Department of Mathematics and Statistics, University of Calgary.

1985 Baltimore, Department of Mathematical Sciences, The Johns Hopkins University.

1985 Calgary (Canada), Winter Meeting of the Canadian Mathematical Society.

1986 Ottawa (Canada), Workshop on Stochastic Processes, Carleton University.

1986 Banff (Canada), Annual Meeting of the Statistical Society of Canada.

1986 Ottawa (Canada), Statistical Quality Control, University of Ottawa.

1987 Budapest (Hungary), Mathematical Research Institute of the Hungarian Academy of Sciences.

1987 Ottawa (Canada), Department of Mathematics and Statistics, Carleton University.

1987 Ithaca, Statistical Inference from Stochastic Processes, AMS-SIAM-IMS Summer Research Conference, Cornell University.

1987 Switzerland, First International Conference on Statistical Data Analysis Based on the L1-norm and Related Methods, University of Neuchatel.

1987 Department of Mathematics, Applied Probability Seminar, University of Wisconsin-Madison,

1987 Department of Statistics, University of Wisconsin-Madison.

1987 Cleveland, Probability Consortium of Western Reserve Universities, Case Western Reserve University.

1988 Montreal (Canada), Department of Mathematics and Statistics, McGill University.

1988 Salt Lake City (Utah), Department of Mathematics, University of Utah.

1988 Binghamton (New York), Department of Mathematics and Statistics, State University of New York-Binghamton.

1989 47th Session of the International Statistical Institute, Paris, France.

1991 Nonparametric Statistics and Related Topics: International Symposium, Ottawa, Canada

1991 Ottawa (Canada), Laboratory for Research in Probability and Statistics, Carleton University

1991 Edmonton (Canada), Department of Statistics and Applied Probability, University of Alberta

1991 College Station, Department of Statistics, Texas A & M University, Texas.

1992 222nd IMS Meeting (with Biometric Society and ENAR), Cincinnati, Ohio IMS Invited Papers Session on Empirical Processes

1992 AMS-IMS-SIAM Summer Research Conference on Change-Point Problems, South Hadley, Massachusetts.

1992 Workshop on "Changepoint analysis, empirical reliability," Carleton University - University of Ottawa, Ottawa, Canada

1994 12th Prague Conference on Information Theory, Statistics and Decisions Theory, Prague Czech Republic.

1996 Environmental Statistics and Earth Sciences (4th World Congress of Bernoulli Society) Brno, Czech Republic.

1997 International Conference on Asymptotic Methods in Probability and Statistics. Ottawa, Canada.

1998 University of Oregon, Eugene Oregon

1998 9th International Environmetrics Society Conference, Gold Coast Australia

1998 Prague Conference on Asymptotic Methods in Probability and Statistics

1998 Winter Meeting of the Canadian Math. Soc. Kingston Ontario.

1999 Johns Hopkins University, Baltimore Maryland

1999 University of Liverpool, England

1999 Annual Meeting of the Statistical Society of Canada, Regina Canada

1999 Limit Theorems in Probability and Statistics, Hungary

1999 Department of Mathematical Sciences University of Alberta Edmonton Canada

2000 Asymptotic Results in Probability and Statistics, Hungary

2000 Asymptotics in Financial Models Ottawa Canada

2000 Utah State University, Logan

2001 Conference on Statistics and Information Theory, Budapest, Hungary

2002 University of Western Ontario, London, Ontario, Canada

2002 Second Conference on Asymptotic Statistics Ottawa Canada

2002 Workshop on Statistical Inference Brno Czech Republic

2002 981st AMS Meeting, Salt Lake City Utah

2003 National University of Singapore, Singapore

2004 Mathematisches Institut, Universität zu Köln

2004 Technical University of Budapest, Hungary

2004 Technical University of Graz, Austria

2004 Limit Theorems in Stochastics, Budapest, Hungary

2004 Cleveland, Probability Consortium of Western Reserve Universities, Case Western Reserve University.

2004 University of Alberta, Edmonton, Alberta

2005 Statistics for Dependent Data CREST, Paris, France

2005 Colorado State University, Fort Collins.

2005 Hong Kong University, Hong Kong, China

2005 National University of Singapore, Singapore

2006 Prague Stochastics, Czech Republic.

2006 Journées MAS, Lille France.

2007 Department of Statistics, Charles University, Prague Czech Republic.

2007 Department of Economics and Statistics, University of Vienna, Austria.

2007 University of Sydney, Recent advances in asymptotic probability and statistics (short course)

2008 University of Kaiserslautern, Germany

2008 Time Series with Sudden Structural Changes, Oberwolfach, Germany

2008 Department of Statistics, Charles University, Prague Czech Republic

2008 StatDep 2008 Conference (Time Series) Paris, France

2008 University of California–Davis

2008 Department of Economics (EQUIPPE) Université Charles–de–Gaulle (Lille 3)

2008 Fraud Detection in Finance, Poincaré Institute, Paris, France

2008 Econometrics and Time Series, University of Rennes, France

2009 Fachbereich Mathematik University of Köln, Germany

2009 NSF-NBER Meeting on Financial Time Series, Davis California.

2009 Statistische Woche, Wuppertal, Germany.

2010 Structural breaks, Pfalzakademie, Lambrecht, Germany

2010 Prague Stochastics, Prague, Czech Republic.

2011 Département de Mathématique, Université Libre de Bruxelles, Brussels, Belgium

2011 Joint Seminar of the Statistics Departments of Montreal, Canada

2011 Department of Statistics, Charles University, Prague, Czech Republic

2011 The 43th Annual Meeting of the French Statistical Society, Tunisia.

2011 New Developments in Econometrics and Time Series, Brussels, Belgium.

2012 Breaks in Time Series Karlsruhe, Germany

2012 Department of Statistics, Charles University, Prague, Czech Republic

2012 Cass Business School, University of London

2012 University of Paris (Cergy) (5 lectures on change point detection)

2012 Department of Statistics, Bingham Young University, Provo.

2012 New developments on statistics, Charles University, Prague, Czech Republic

2013 Workshop on change points analysis in finance (keynote speaker) Cass Business School, London UK

2013 Department of Statistics, Charles University, Prague, Czech Republic

2013 Department of Mathematics, Wayne State University, Detroit MI.

2013 Department of Statistics, Universidad Complutense Madrid, Spain

2013 New Developments in Time Series, Hong Kong

2014 Newton Fellow, Cambridge University, Cambridge, UK.

2014 Queen Mary College, University of London, UK.

2014 University of Birmingham, UK, School of Finance (short course)

2014 University of Cologne, Germany

2014 Technical University of Dortmund, Germany

2014 Department of Statistics, Charles University, Prague, Czech Republic

2014 Department of Finance, People's University, Beijing, China (10 lectures).

2014 Santalo Lecture, Faculty of Mathematics, Universidad Complutense Madrid, Spain.

2014 Conference on Computational Statistics and Econometrics. Pisa, Italy.

2015 Department of Statistics, Charles University, Prague, Czech Republic.

2015 Department of Finance, University of Birmingham (3-week summer program, including workshop)

2015 Change points and time series, Department of Economics, University of Athens, Greece

2015 Department of Economics, University of California-San Diego

2016 Department of Statistics, Charles University, Prague, Czech Republic.

2016 Department of Statistics and Probability, Chinese University of Hong Kong, Hong Kong, China.

2016 Department of Statistics and Actuarial Science, University of Hong Kong, Hong Kong, China.

2016 Faculty of Finance, Rinmin University, Beijing, China.

2017 International meeting on sequential analysis (plenary speaker), Rouen, France.

2017 Short Course on Limit Theorems in Finance, Faculty of Finance. Rinmin University, Beijing, China.

2017 Goodness-of-fit and change point problems. International meeting, Frankfurt Germany

2018 Department of Economics Carlos III University, Madrid, Spain.

2018 Short Course on Time Series Analysis, Faculty of Finance. Rinmin University, Beijing, China.

- 2019 Goodness-of-fit and change point problems. International meeting, Trento. Italy (member of the organizing committee)
- 2020 Functional and Large Dimensional Data. Brno, Czech Republic (postponed to 2021)
- 2022 Nonparametric methods and change point analysis. Rennes, France.
- 2023 Nonparametric methods and change point analysis. Kruger National Park, South Africa.

## PH.D. Dissertations

- Chang-Jo F. Chung, 1986 “Confidence Bands for Quantile Function and Percentile Residual Lifetime Under Random Censorship”, Carleton University, Ottawa, Canada (joint with M. Csorgo).
- Lingyan Ma, 1995 “Multinomial Change-Point Problems”, University of Utah, Salt Lake City, Utah.
- Monika Serbinowska, 1996 “Some Limit Results in Change-Point Analysis”, University of Utah, Salt Lake City, Utah
- Irina Grabowski, 2000 “Asymptotic Analysis in Change Point Problems”, University of Utah, Salt Lake, Utah
- Alexander Aue, 2004 “Sequential Change-Point Analysis based on Invariance Principles”, Universität zu Köln (joint with Josef Steinebach)
- Mario Kühn, 2008 “Sequential Change-Point Analysis Based on Weighted Moving Averages”, Universität zu Köln (joint with Josef Steinebach)
- Nao Mimoto, 2008 “Statistical Inference for Densities and Related Indices”, University of Western Ontario (joint with Ricardas Zitikis)
- Elisha Rae Hughes, 2011 “Existence, Uniqueness, Stochastic Stability, and Estimation Theory of Multivariate GARCH Models”, University of Utah, Salt Lake City, Utah
- Ron Reeder, 2011 “Limit Theorems in Functional Data Analysis with Applications”, University of Utah, Salt Lake City, Utah
- Alexander Schmitz, 2011 “Limit Theorems in Change-Point Analysis for Dependent Data” Universität zu Köln (joint with Josef Steinebach)
- Brian Knaeble, 2012 “Learning Statistics in the Computer Lab”, University of Utah, Salt Lake City, Utah
- Stefan Fremdt, 2014 “Asymptotic Methods in Change-Point Analysis”, Universität zu Köln (joint with Josef Steinebach)
- Jia Wang, 2014 “Change Point Analysis of Panel Data”, University of Utah, Salt Lake City, Utah
- Gregory Nelson Rice, 2015 “Invariance principles in functional time series analysis with applications”, University of Utah, Salt Lake City, Utah
- Brent Kerby, 2016 “Semivariogram estimation: asymptotic theory and its applications”, University of Utah, Salt Lake City, Utah
- Hanlei Zhu, 2019 “Change point detection in heteroscedastic functional time series”, University of Utah, Salt Lake City, Utah
- Curtis Miller, 2020 “Change point interference with Rényi-type statistics”, University of Utah, Salt Lake City, Utah

## Masters Theses

- Pal Pusttai, 1983 "Confidence bands from censored samples and their applications for survival functions of patients with operated heart disease", Szeged University, Hungary.
- Erika May, 1984 "Numerical calculations of boundary crossing probabilities", Szeged University, Hungary.
- Lingyan Ma, 1992 "Report on applications of changepoint problems", University of Utah, Salt Lake City.
- Susan Loveland, 1993 "Change point problems: a statistical report", University of Utah, Salt Lake City.
- Timothy K. Marek, 1997 "An application of change-point detection: monthly meteorological measurements in Prague (1775–1989)", University of Utah, Salt Lake City.
- Elizaveta Levina, 1997 "Change-point detection in data on water discharges", University of Utah, Salt Lake City.
- Kevin Mensing, 1999 "Statistical model for the finances of a small congregation", University of Utah, Salt Lake City.
- Kathy Vamianakis, 2000 "Bootstrap and U-statistics", University of Utah, Salt Lake City.
- Ayumi Ohshita, 2001 "On the estimation of the number of moments of a GARCH(1,1) sequence", University of Utah, Salt Lake City.
- Shon Rasch, 2001 "The autocorrelation in general autoregressive conditional heteroscedasticity (GARCH) models", University of Utah, Salt Lake City.
- Michael Elifritz, 2001 "On the estimation of GARCH(1,1) errors", University of Utah, Salt Lake City.
- Pamela Anne Schilling, 2002 "Nonparametric estimation for biological dispersal", University of Utah, Salt Lake City.
- Sunny Laws, 2003 "On the estimation of a GARCH(1,1) process using the Laplace likelihood", University of Utah, Salt Lake City.
- Craig Teerlink, 2004 "Using change-point analysis to investigate an assumption of the Cobb–Douglas production function", University of Utah, Salt Lake City.
- Ian Renner, 2004 "A study of the expected values of functionals of Brownian motions and Brownian bridges" University of Utah, Salt Lake City.
- Nao Mimoto, 2004 "Sequential monitoring scheme to detect parameter change in GARCH(1,1) models" University of Utah, Salt Lake City.
- Roberta James, 2005 "The effects of hierarchical data on the analysis of tube feeding and post stroke acute care rehabilitation outcome" University of Utah, Salt Lake City.
- Mohammed Chaara, 2005 "Detecting parameter change in linear models: CUSUM's of residuals technique" University of Utah, Salt Lake City.
- Angie Marchant, 2005 "Development of a FEV<sub>1</sub>% baseline for cystic fibrosis patients" University of Utah, Salt Lake City.
- J. Michael Peterson, 2005 "Estimation in first-order random coefficient autoregressive models" University of Utah, Salt Lake City.
- Jon Gunnip, 2006 "Analyzing aggregated AR(1) processes" University of Utah, Salt Lake City.
- Daniel Nye, 2006 "Simulating stable random variables" University of Utah, Salt Lake City.

Ryan Hafen, 2006 “Topics in the empirical distribution functions and change–point analysis” University of Utah, Salt Lake City.

Jeremy Moris, 2007 “An analysis of credits to graduation at the University of Utah” University of Utah, Salt Lake City.

Matthew L. Reimherr, 2008 “Sequential change point analysis in linear models” University of Utah, Salt Lake City.

Kent E. Page, 2008 “Estimation in random coefficient models” University of Utah, Salt Lake City.

Jia Geng, 2008 “Topics in linear trend analysis and and application to temperature with changepoints” University of Utah, Salt Lake City.

Ryan Paul Johnstone, 2009 “Solutions of first order autoregressive equations” University of Utah, Salt Lake City.

Brian Knaeble, 2010 “Applications of central limit theorems to geometry” University of Utah, Salt Lake City.

Julian Chan, 2011 “Panel data” University of Utah, Salt Lake City.

Wei Jiang, 2011 “An analysis of weather change in Australia” University of Utah, Salt Lake City.

Amy Zahler, 2011 “Female participation in the workforce” University of Utah, Salt Lake City.

Jia Wang, 2012 “A panel data analysis of the Gini coefficient” University of Utah, Salt Lake City.

William Caughey, 2013 “Association of physical activity and depression intruck drivers” University of Utah, Salt Lake City.

Ryan Barrett, 2014 “Multilevel modeling of traumatic brain injury patients: theory and applications” University of Utah, Salt Lake City.

Stephen Whipple, 2014 “Adaptive bandwidth selection in the long run covariance estimator of functional time seroies” University of Utah, Salt Lake City.

Geoffrey Bradway, 2014 “Combinatorial order cleaning using reinforcement learning” University of Utah, Salt Lake City.

Qin Liu, 2014 “Anomaly detection based on time–series modeling methods” University of Utah, Salt Lake City.

Lindsley Glauser, 2014 “Statistics through high school common core” University of Utah, Salt Lake City.

Daniel Pellatt, 2015 “A functional GARCH (1,1) model” University of Utah, Salt Lake City.

Sarah Krstyen, 2015 “Walking stability of military personnel: what mixed models have to say about your backpack’s extra weight” University of Utah, Salt Lake City.

Stuart Schulties, 2015 “Automatic hearth segmentation for image phenotyping and classification of pulmonary arterial hypertension” University of Utah, Salt Lake City.

Patrick Bardsley, 2016 “Generating Cramér–von Mises statistics from eigenvalue summations.” University of Utah, Salt Lake City.

Siben Li, 2017 “Detecing at–most–3 changes in linear regression models.” University of Utah, Salt Lake City.

Samuel Stephenson, 2017 “Approximations of the kernel in the sample kernel estimation of the long run covariance for functional time series to esure positive semi definiteness.” University of Utah, Salt Lake City.



Jonathan Bown, 2019 “Structural change point testing with application to stock return.” University of Utah, Salt Lake City.

Deicy Cristiano, 2020 “An application of change point test for England’s yield curves.” University of Utah, Salt Lake City.

Zack Coleman, 2020 “Markov madness: What statistics can tell us about college basketball’s lost tournament.” University of Utah, Salt Lake City.

Ambrose Han, 2021 “Change point detection with applications.” University of Utah, Salt Lake City.

Pick, Christina, 2021 “Change point detection in ARMA processes.” University of Utah, Salt Lake City.

Tiner, Trevis, 2021 “Value at risk estimation with extreme values.” University of Utah, Salt Lake City.

Wickens, Kali, 2021 “Functional data analysis of air pollutants in Salt Lake County.” University of Utah, Salt Lake City.

Pournaderi, Mehrdad, 2022 “Sequential monitoring of changes in dynamic linear models”, University of Utah, Salt Lake City.

Cardoen, Wim R.M., 2023 “An application of change point detection to financial indices.” University of Utah, Salt Lake City.

## Senior Honors Thesis

Matthew Logan Reimherr, 2006 “Analysis of stochastic migration models” University of Utah, Salt Lake City.

Ryan Paul Johnston, 2006 “Solutions of AR(1) equations” University of Utah, Salt Lake City.

## Grants

Hungarian National Foundation 1986–1988 (joint with P. Revesz, S. Csorgo, E. Csaki and A. Foldes)

Energy, Mine and Resources (government of Canada), 1986–1988 (joint with M. Csorgo)

Undergraduate Research Experience (Department of Mathematics, University of Utah), 1989

Travel grants from U.S. federal agencies to attend meetings at Cornell University, University of Iowa, University of California-Davis and South Hadley.

NATO-NSF East Europe Outreach Grant 1994–1996.

NSERC(Canada) Foreign Research Award 1994–1995.

NSERC (Canada) Collaborative Project Grant 1995–1997.

NATO Collaborative Research Grant 1996–1999.

Distinguished Visitor Award, British Research Council 1999.

NATO Collaborative Research Grant 2001–2003.

Domus Hungarica Sci. Art. 2001–2002.

NSF International Research Grant 2002–2006.

NATO Research Grant (Security) 2004–2006.

NSF Research Grant 2006–2009.

Hong Kong Research Grant (RGC-HKUST6428/06H)

NSF Research Grant 2009–2013.

Collaborative Research Grant from the Scientific Council of the Czech Republic 2014–2017.

NSF Research Grant 2013–2017.

NSF Research Grant 2019–2022 (with Katya Epshteyn)