Zhang, Li-Xin (Curriculum Vitae)

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Current Research Areas:

Limit Theorems in Probability and Statistics

Adaptive Designs in Clinical Trials

Limit Theorems under Non-linear Expectation

Statistical Inference for Clinical Trials

Dependent Data Modeling

Sample Path Properties of Stochastic Processes

Education:

- Feb. 1993—Jul. 1995 Ph.D. in Probability and Statistics, Fudan University, PRC
- Sep. 1990—Dec. 1992 Graduate student program in Probability and Statistics, Hangzhou University, PRC
- Sep. 1986—Jul. 1990 B. Sc in Mathematics, Tianjin Teacher's College of Professional Technology, PRC

Working Experience:

- Jan. 2013-Pressent, Qiushi Professor, Zhejiang University, PRC
- Sep. 1998—Present, Professor: Department of Mathematics (School of Mathematical Sciences), Zhejiang University, PRC
- Jun. 1997—Sep. 1998, Professor: Department of Mathematics, Hangzhou University, PRC
- Sep. 1995—May 1997, Post-doctor Fellow: Department of Mathematics, Hangzhou University, PRC

Positions and Professional Service:

- Vice Chair of Center for Data Science, Zhejiang University(2017.6 -present)
- Vice Dean of School of Mathematical Sciences, Zhejiang University (2015.09-2017.09)
- Vice Chair of Department of Mathematics, Zhejiang University (2009.09-2015.09)
- Member of directors of Chinese Association for Applied Statistic
- President of Zhejiang Association for Applied Statistics (2015--)
- Member of directors of Zhejiang Mathematical Society(2004--)
- Member of directors of Chinese Society of Probability and Statistics (2006.10-2010.10,2014--)
- Director of Institute of Statistics, Zhejiang University (2007.01-2012.04)

Grant:

- Natural Science Foundation of China (NSFC) grant (Key project): Probability models random environments　(2018.1-2022.12，　No. 11731012，RMB 2,500,000) (Principle Investigator)

Selected Publications:

Book:

Lin, Z.Y., Lu, C. R. and Zhang, L. X. (2001). Sample Path Properties of Gaussian Processes.Press of Zhejiang University, Hangzhou (in English), Science Press (in Chinese).

Papers:

1. Zhang, L.-X.(2016) Central limit theorems of a recursive stochastic algorithm with applications to adaptive designs, *Annals of Applied Probability,* Vol. 26(6): 3630-3658

2. Ma, W., Hu, F. and Zhang, L.X. (2015) . Testing Hypotheses of Covariate-Adaptive Randomized Clinical Trials. *Journal of the American Statistical Association*, Vol. 110(510): 669-680.

3. Zhang, L.X., Hu, F., Cheung, S.H. and Chan, W.S. (2014) Asymptotic properties of multi-color randomly reinforced Polya urns. *Advances in Applied Probability*. Vol 46: 585-602

4. Zhang, L.X., Hu, F., Cheung, S.H. and Chan, W.S. (2011). Immigrated urn models -- theoretical properties and applications, *Annals of Statistics* Vol. 39(1): 643–671.

5. Hu, F., Zhang, L.X. and He,X.M.. (2009). Efficient randomized adaptive designs, *Annals of Statistics*, Vol. 37, No. 5A, 2543–2560.

6. Zhang, L.X., Hu, F., Cheung, S.H. and Chan, W.S. (2007). Asymptotic properties of covariate-adjusted response-adaptive designs, *Annals of Statistics*, Vol. 35(3):1166-1182

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8. Zhang, L. X., Hu, F. and Cheung, S. H. (2006) Asymptotic theorems of sequential estimation-adjusted urn models for clinical trials, *Annals of Applied Probability*, Vol.16(1): 340-369.

9. Hu, F. and Zhang, L. X. (2004). Asymptotic properties for doubly adaptive biased coin designs of multi-treatment clinical trials. *Annals of Statistics*, Vol.32(1): 268-301.

10. Hu, F. and Zhang, L. X. (2004). The asymptotic normality of urn models for clinical trials with delayed response. *Bernoulli*, Vol.10 (3): 447-463.

11. Bai, Z. D., Hu, F. and Zhang, L. X. (2002). The Gaussian approximation theorems for urn models and their applications. *Annals of Applied Probability,* Vol. 12:1149-1173.

12. Zhang, L. X. (2001). A Strassen's law of the iterated logarithm for negatively associated random vectors. *Stoch. Processes Their Appl.*, Vol.95: 311-328.

13. Zhang, L. X. (1997). On the fractal nature of increments of lp-valued Gaussian processes. *Stoch. Processes Their Appl.,* Vol. 71:91—110.

14. Zhang, L. X. (1997). Strong approximation theorems for geometrically weighted random series and their applications. *Annals of Probability,* Vol. 25: 1621—1635.

15. Zhang, L. X. (1996). Two different kinds of liminfs on the LIL for two-parameter Wiener processes. *Stoch. Processes Their Appl.*, Vol. 63: 175—188.

List of Publications:

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150. ZANG Qingpei and ZHANG Li-Xin. Asymptotic behaviour of the trajectory fitting estimator for reflected Ornstein–Uhlenbeck Processes, *Journal of Theoretical Probability,* https://doi.org/10.1007/s10959-017-0796-7 (accepted)

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2017

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147 LIU, Guangying; ZHANG, Li-Xin and FANG, Xinian. Multipower variation from generalized difference for fractional integral processes with jumps, *Communications in Statistics-Theory and Methods*,   Vol.46(19): 9662-9678

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142. ZHANG Li-Xin. Rosenthal's inequalities for independent and negatively dependent random variables under sub-linear expectations with applications, *Science in China-Mathematics* Vol. 59(4):751-768. DOI: 10.1007/s11425-015-5105-2

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140. ZANG Qingpei and ZHANG Li-Xin. A general lower bound of parameter estimation for reflected Ornstein–Uhlenbeck processes. *Journal of Applied Probability,* Vol.53(1): 22-32. DOI: 10.1017/jpr.2015.5

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139. ZHANG Li-Xin. Donsker's Invariance principle under the sub-linear expectation with an application to Chung's law of the iterated logarithm, *Communications in Mathematics and Statistics,*Vol. 3 (2): 187-214.

138. MA Wei, HU Feifang and ZHANG Li-Xin. Testing Hypotheses of Covariate-Adaptive Randomized Clinical Trials. *Journal of the American Statistical Association*, Vol. 110(510): 669-680.

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136. HU Feifang., HU Yanqing, MA Wei, ZHANG Li-Xin and ZHU Hongjian . Statistical inference of adaptive randomized clinical trials for personalized medicine. *Clinical Investigation, Vol. 5(4), 415–425*.

135. CHAN Waisum, CHEUNG Siuhung, CHOW Waikit and ZHANG Li-Xin. A robust test for threshold-type non-linearity in multivariate time-series analysis, *Journal of Forecasting.*Vol.34(6): 441-454

134. ZHANG Yang and ZHANG Li-Xin (2015). On the almost sure invariance principle for dependent Bernoulli random variables. *Statistics & Probability Letters,* Vol. 107: 264-271

133. ZHANG Li-Xin and ZHANG Yang (2015). Asymptotics for a class of dependent random variables, *Stattistics & Probability Letters*, Vol. 105: 47-56.

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130. CHEUNG Siuhung, ZHANG Li-Xin, HU Feifang and CHAN Waisum, Covariate-adjusted response-adaptive designs for generalized linear models, *Journal of Statistical Planning and Inference*, Vol. 149: 152-161.

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compound binomial model with Markovian environment. *Applied-Mathematics-A Journal of Chinese University Series B*,   Vol.26(3): 265-279.

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116. Robust estimation in a nonlinear cointegration model. *Journal of Multivariate Analysis*, Vol. 101(3):706-717. (with Chen Jia and Li Degui)

115. Local linear M-estimation for spatial processes in fixed-design models, *Metrika*, Vol. 71(3):319-340. (with Chen Jia)

114. Some Limit Theorems for Linear Processes Generated by Symmetrically Exchangeable Random Variables. *Stochastic Analysis and Applications*, Vol. 28(1): 1-7. (with Fu ke-Ang)

113. Characterization of LIL Behavior for Non-Degenerate B-Valued U-Statistics. *Communications in Statistics-Theory and Methods*, Vol. 39(7): 1258-1269. (with Fu ke-Ang)

112. Testing for changes in the mean or variance of long memory processes. *Acta Mathematica Sinica-English Series*, Vol. 26(8): 1591-1600 .   (with Li Yunxia and Xu Jianjun)

111. Convergence Rates of Tail Probabilities for Sums under Dependence Assumptions. *Acta Mathematica Sinica-English Series*, Vol. 26(8): 1591-1600. (with Yang Xiaorong, Liu Weidong and Fu Ke-Ang)

110. Empirical Euclidean likelihood for general estimating equations under association dependence. *Applied Mathematics-A Journal of Chinese University Series B*, Vol. 25 (4): 437-446. (with Chen Youyou)

109. Second Moment Convergence Rates for Uniform Empirical Processes. *Journal of Inequalities and Applications:* Art. No. 972324 2010, ISSN: 1025-5834. DOI: 10.1155/2010/972324.   (with Chen Youyou)

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108. Efficient randomized adaptive designs, *Annals of Statistics*, Vol. 37 (5A): 2543- 2560, 2009. (with He,X.M. and Hu, F..)

107. On a robust test for SETAR-type non-Linearity in time series analysis, *Journal of Forecasting*, Vol. 28 (5): 445-464, 2009. (with Cheung, S. H., Chan, W. S., and King C. H.)

106. Temporal aggregation of Markov switching financial return models, Applied *Stochastic Models in Business and Industry*,Vol 25 (3): 359-383, 2009 .(with Chan, W.S. and Cheung, S.H.)

105. A note on the consistency of a robust estimator for threshold autoregressive processes, *Statistics & Probability Letters,* Vol. 79 (6): 807-813, 2009. (with Chan, W. S.,Cheung, S. H. and King C. H..)

104. The Gaussian approximation for multi-color generalized Friedman's urn model, *Scinece in China Series A*, Vol. 52 (6): 1305-1326 , 2009. (with Hu, FF)

103. A new family of covariate-adjusted response adaptive designs and their properties, *Appl. Math. J. Chinese Univ.* Vol. 24(1), 1-13, 2009. (with Hu, FF)

102. A general LIL for trimmed sums of random fields in Banach spaces, *Acta Mathematica Hungarica*, Vol.122 (1-2): 91-103, 2009 (with Fu, K. -A.)

101. Precise rates in the law of the logarithm for the moment convergence in Hilbert spaces, *Acta Mathematics Sinica, English Series.* Vol.25 (2): 191-208, 2009. (with Fu,K.A.) .

100. Asymptotic properties of nonparametric M-estimation for mixing functional data, *Journal of Statistical Planning and Inference, Vol.*139(2), 533-546, 2009. (with Chen,J.)

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99. A note on self-normalized Dickey-Fuller test for unit root in autoregressive time series with GARCH errors, *Appl. Math. J. Chinese Univ. Ser B.* Vol.23(2): 197- 201, 2007 (with Yang, X. R.)

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97. Strong limit theorems for random sets and fuzzy random sets with slowly varying weights. *Information Science*, Vol.178 (12):2648-2660, 2008. (with Fu, K.A.)

96. Strong laws of large numbers for arrays of rowwise independent random compact sets and fuzzy random sets, , *Fuzzy Sets and Systems*, Vol.159(24) : 3360- 3368, 2008 (with Fu, K.A.)

95. Temporal aggregation of equity return time-series models, *Mathematics and Computers in Simulation*, Vol. 78, 172-180, 2008. (with Chan, W.S., Chan, W.S, Cheung, S.H. and Wu,K.H.)

94. Precise asymptotics in the self-normalized law of the iterated logarithm, *Journal of Mathematical Analysis and Application,* Vol 340 (2):1249-1262, 2008 (with Pang, T. X. and Wang, J. F.)

93. Precise asymptotics for the first moment of the error variance estimator in linear models, *Applied Mathematics Letters*, Vol.21 (6):641-647, 2008 (with Fu, K.A. and Liu, W.D.)

92. Spatial local M-estimation under association, *Metrika,* Vol.67:11-29, 2008. (with Chen, J. and Li, D. G.) .

91.On the moment convergence rates of LIL in Hilbert space, *Mathematical and Computer Modelling,* Vol.47:153-167, 2008. (with Fu, K. A.)

90. Precise asymptotics in the law of logarithm under dependence assumptions, *Computers & Mathematics with Applicatins,*Vol.56 (6):1634-1642, 2008 (with Liu, W.D. and Yang, X.R.)

89. A LIL for independent non-identically distributed random variables in Banach space and its applications, *Scinece in China Series A*, Vol. 51 (2):219-232, 2008 (with Fu K.A. and Liu W.D.)

88. Precise asymptotics in Chung's law of the iterated logarithm, *Acta Mathematics Sinica, English Series. Vol 24(2):* 631-646, 2008.

87. Bahadur representation of nonparametric *M*-estimators for spatial processes, *Acta Mathematics Sinica, English Series.* Vol. 24(11), pp. 1871–1882 (with Chen,J. and Li. D.G.)

2007

86. Limit theorems on adaptive designs in clinical trials, *Asymptotic Theory in Probability and Statistics with Applications* (Lai, T.L., Qian, L.F. and Shao, Q.M.eds), pp 80-108, Higher Education Press and International Press, 2007. *Proceeding of Internatioanl Conference on Asymptotic Theory in Probability and Statistics 2006*

85. Asymptotic properties of covariate-adjusted response-adaptive designs, *Annals of Statistics,* Vol. 35(3):1166-1182, 2007. (with Hu, F., Chueng, S. H. and Chan, W. S.)

84. A generalized urn model for clinical trials with delayed responses. *Statistica Sinica,* Vol. 17:387-409, 2007. (with Chan, W.S., Cheung. S.H. and Hu, F.)

83. A generalized drop-the-loser urn for multi-treatment clinical trials, *Journal of Statistical Planning and Inference,* Vol. 137:2011-2023, 2007. (with Sun, R.B., Cheung, S.H.)

82. Precise rates in the law of logarithm for the moment convergence of i.i.d. random variables, *Journal of Mathematical Analysis and Application,* Vol.327:695-714, 2007. (with Jiang, Y. and Pang, T. X.)

81. A not on the invariance of principle of the product of sums of random variables, *Electronic Communications in Probability,* Vol. 12:51-56,2007. (with Huang, W.)

80. The Limit distribution of the bootstrap for the unit root test statistic when the residuals are dependent, *Metrika,* Vol 65(2), 195-206,2007. (with Yang, X.R.)

79. Precise rates in the law of the logarithm for negatively associated random variables,

Computers and Mathematics with Application, Vol.54:687-698, 2007. (with Fu, K. A.)

78. A Berry-Esseen theorem and a law of the iterated logarithm for asymptotic negatively associated sequences, *Acta Mathematics Sinica, English Series,* Vol.23(1):127-136, 2007. (with Wang, J. F.)

77. A LIL for independent non-identically distributed random variables in Banach space with its applications, *Science in China*, Vol. 37(12):1438-1450. (in Chinese) (with Liu, W. D. and Fu, K. A.)

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74. The bootstrap central limit theorem for negatively associated random sequences, *Journal of Zhejiang University* **Sci. Ed.** Vol. 34(2):125-127,2007. (with Sun, J. L.) (in Chinese)

73. Asymptotic normality for the products of a kind of truncated partial sums, *Journal of Zhejiang University*   **Sci. Ed.** Vol. 34(2):129-131,2007.(with Zou, H. L.) (in Chinese)

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57. The estimation of the variance of partial sums of a sequence of ρ*-mixing random variables, ***Chinese J. Appl. Probab. & Statist.,***, Vol. 21(4): 421-430, 2005. (in Chinese) (with Wang, C.)

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39. LIL and approximation of rectangular sums of B-valued random variables when extreme terms are excluded. ***Acta Mathematics Sinica, English Series*** , Vol.18(3): 605-614, 2002.

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