

Stanford

David Siegmund

John D. and Sigrid Banks Professor, Emeritus
Statistics

Bio

ACADEMIC APPOINTMENTS

- Emeritus Faculty, Acad Council, Statistics
- Member, Bio-X

Teaching

COURSES

2023-24

- Sequential Analysis: STATS 223, STATS 323 (Aut)

2022-23

- Consulting Workshop: STATS 390 (Win)
- Literature of Statistics: STATS 319 (Win)
- Theory of Probability III: MATH 230C, STATS 310C (Spr)

2021-22

- Consulting Workshop: STATS 390 (Win)
- Literature of Statistics: STATS 319 (Aut)
- Sequential Analysis: STATS 223, STATS 323 (Win)

2020-21

- Consulting Workshop: STATS 390 (Win)
- Introduction to Stochastic Processes II: STATS 218 (Spr)
- Literature of Statistics: STATS 319 (Spr)
- Stochastic Processes: STATS 317 (Win)

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)

Will Hartog

Publications

PUBLICATIONS

- **SEGMENTATION AND ESTIMATION OF CHANGE-POINT MODELS: FALSE POSITIVE CONTROL AND CONFIDENCE REGIONS** *ANNALS OF STATISTICS*
Fang, X., Li, J., Siegmund, D.

2020; 48 (3): 1615–47

- **A genome-wide approach for detecting novel insertion-deletion variants of mid-range size.** *Nucleic acids research*
Xia, L. C., Sakshuwong, S., Hopmans, E. S., Bell, J. M., Grimes, S. M., Siegmund, D. O., Ji, H. P., Zhang, N. R.
2016; 44 (15)
- **POISSON APPROXIMATION FOR TWO SCAN STATISTICS WITH RATES OF CONVERGENCE** *ANNALS OF APPLIED PROBABILITY*
Fang, X., Siegmund, D.
2016; 26 (4): 2384-2418
- **SCAN STATISTICS ON POISSON RANDOM FIELDS WITH APPLICATIONS IN GENOMICS** *ANNALS OF APPLIED STATISTICS*
Zhang, N. R., Yakir, B., Xia, L. C., Siegmund, D.
2016; 10 (2): 726-755
- **HIGHER CRITICISM: p-VALUES AND CRITICISM** *ANNALS OF STATISTICS*
Li, J., Siegmund, D.
2015; 43 (3): 1323-1350
- **SEQUENTIAL MULTI-SENSOR CHANGE-POINT DETECTION** *ANNALS OF STATISTICS*
Xie, Y., Siegmund, D.
2013; 41 (2): 670-692
- **Change-Points: From Sequential Detection to Biology and Back** *SEQUENTIAL ANALYSIS-DESIGN METHODS AND APPLICATIONS*
Siegmund, D.
2013; 32 (1): 2-14
- **SEQUENTIAL MULTI-SENSOR CHANGE-POINT DETECTION** *Information Theory and Applications Workshop*
Xie, Y., Siegmund, D.
IEEE.2013
- **MODEL SELECTION FOR HIGH-DIMENSIONAL, MULTI-SEQUENCE CHANGE-POINT PROBLEMS** *STATISTICA SINICA*
Zhang, N. R., Siegmund, D. O.
2012; 22 (4): 1507-1538
- **Spectrum Opportunity Detection with Weak and Correlated Signals** *46th Asilomar Conference on Signals, Systems and Computers*
Xie, Y., Siegmund, D.
IEEE.2012: 128–132
- **False discovery rate for scanning statistics** *BIOMETRIKA*
Siegmund, D. O., Zhang, N. R., Yakir, B.
2011; 98 (4): 979-985
- **DETECTING SIMULTANEOUS VARIANT INTERVALS IN ALIGNED SEQUENCES** *ANNALS OF APPLIED STATISTICS*
Siegmund, D., Yakir, B., Zhang, N. R.
2011; 5 (2A): 645-668
- **Joint Testing of Genotype and Ancestry Association in Admixed Families** *GENETIC EPIDEMIOLOGY*
Tang, H., Siegmund, D. O., Johnson, N. A., Romieu, I., London, S. J.
2010; 34 (8): 783-791
- **Detecting simultaneous changepoints in multiple sequences** *BIOMETRIKA*
Zhang, N. R., Siegmund, D. O., Ji, H., Li, J. Z.
2010; 97 (3): 631-645
- **Detecting simultaneous changepoints in multiple sequences.** *Biometrika*
Zhang, N. R., Siegmund, D. O., Ji, H., Li, J. Z.
2010; 97 (3): 631-645
- **Mapping Quantitative Traits in Unselected Families: Algorithms and Examples** *GENETIC EPIDEMIOLOGY*
Dupuis, J., Shi, J., Manning, A. K., Benjamin, E. J., Meigs, J. B., Cupples, L. A., Siegmund, D.

2009; 33 (7): 617-627

● **Minimax optimality of the Shirayev-Roberts change-point detection rule** *JOURNAL OF STATISTICAL PLANNING AND INFERENCE*

Siegmund, D. O., Yakir, B.
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● **The distribution of maxima of approximately Gaussian random fields** *ANNALS OF STATISTICS*

Nardi, Y., Siegmund, D. O., Yakir, B.
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● **Detecting the emergence of a signal in a noisy image** *STATISTICS AND ITS INTERFACE*

Siegmund, D., Yakir, B.
2008; 1 (1): 3-12

● **A unified framework for linkage and association analysis of quantitative traits** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*

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Shi, J., Siegmund, D., Yakir, B.
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● **A modified Bayes information criterion with applications to the analysis of comparative genomic hybridization data** *BIOMETRICS*

Zhang, N. R., Siegmund, D. O.
2007; 63 (1): 22-32

● **Statistical corrections of linkage data suggest predominantly cis regulations of gene expression.** *BMC proceedings*

Shi, J., Siegmund, D. O., Levinson, D. F.
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● **Approximating the variance of the conditional probability of the state of a hidden Markov model** *STATISTICAL APPLICATIONS IN GENETICS AND MOLECULAR BIOLOGY*

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● **QTL mapping under ascertainment** *ANNALS OF HUMAN GENETICS*

Peng, J., Siegmund, D.
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● **Spatial regulation and the rate of signal transduction activation** *PLOS COMPUTATIONAL BIOLOGY*

Batada, N. N., Shepp, L. A., Siegmund, D. O., Levitt, M.
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● **Genome scans with gene-covariate interaction** *GENETIC EPIDEMIOLOGY*

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● **An urn model of Diaconis** *ANNALS OF PROBABILITY*

Siegmund, D., Yakir, B.
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● **On the power for linkage detection using a test based on scan statistics** *BIOSTATISTICS*

Hernandez, S., Siegmund, D. O., de Gunst, M.
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Peng, J., Siegmund, D.
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Lindsay, B. G., Kettenring, J., Siegmund, D. O.
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● **Tail probabilities for the null distribution of scanning statistics *BERNOULLI***

Siegmund, D., Yakir, B.
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● **The maximum of a function of a Markov chain and application to linkage analysis *ADVANCES IN APPLIED PROBABILITY***

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● **Statistical methods for mapping quantitative trait loci from a dense set of markers *GENETICS***

Dupuis, J., Siegmund, D.
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● **The approximate distribution of the maximum of a smoothed Poisson random field *STATISTICA SINICA***

Rabinowitz, D., Siegmund, D.
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● **STATISTICAL-METHODS FOR LINKAGE ANALYSIS OF COMPLEX TRAITS FROM HIGH-RESOLUTION MAPS OF IDENTITY BY DESCENT *GENETICS***

Dupuis, J., Brown, P. O., Siegmund, D.
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● **TESTING FOR A SIGNAL WITH UNKNOWN LOCATION AND SCALE IN A STATIONARY GAUSSIAN RANDOM-FIELD *ANNALS OF STATISTICS***

Siegmund, D. O., Worsley, K. J.
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● **USING THE GENERALIZED LIKELIHOOD RATIO STATISTIC FOR SEQUENTIAL DETECTION OF A CHANGE-POINT *ANNALS OF STATISTICS***

Siegmund, D., Venkatraman, E. S.
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● **Confidence regions in broken line regression *AMS/IMS/SIAM Summer Research Conference on Change-Point Problems***

Siegmund, D. O., Zhang, H. P.
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● **THE EXPECTED NUMBER OF LOCAL MAXIMA OF A RANDOM-FIELD AND THE VOLUME OF TUBES *ANNALS OF STATISTICS***

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- **A SEQUENTIAL CLINICAL-TRIAL FOR COMPARING 3 TREATMENTS ANNALS OF STATISTICS**
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James, B., James, K. L., Siegmund, D.
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- **SEQUENTIAL DETECTION OF A CHANGE IN A NORMAL-MEAN WHEN THE INITIAL-VALUE IS UNKNOWN ANNALS OF STATISTICS**
Pollak, M., Siegmund, D.
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- **APPROXIMATE EXIT PROBABILITIES FOR A BROWNIAN BRIDGE ON A SHORT-TIME INTERVAL, AND APPLICATIONS ADVANCES IN APPLIED PROBABILITY**
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- **CONFIDENCE SETS IN CHANGE-POINT PROBLEMS INTERNATIONAL STATISTICAL REVIEW**
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Hogan, M. L., Siegmund, D.
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 - **CORRECTED DIFFUSION APPROXIMATIONS IN CERTAIN RANDOM-WALK PROBLEMS** *ADVANCES IN APPLIED PROBABILITY*
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 - **NONLINEAR RENEWAL THEORY WITH APPLICATIONS TO SEQUENTIAL-ANALYSIS I** *ANNALS OF STATISTICS*
Lai, T. L., Siegmund, D.
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 - **REPEATED SIGNIFICANCE TESTS FOR A NORMAL MEAN** *BIOMETRIKA*
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