CURRICULUM VITAE

D.A.S. FRASER
Department of Statistical Sciences
University of Toronto
Toronto, Ontario
CANADA, M5S 3G3

CITIZENSHIP   Canadian

DEGREES

1946	B.A.	University of Toronto
1947	M.A.	University of Toronto
1948	M.A.	Princeton University
1949	Ph.D.	Princeton University
1992	D.Math.	University of Waterloo
2002	D.Sc.	University of Toronto

EMPLOYMENT

APPOINTMENTS

1949-53	Assistant Professor	Mathematics	University of Toronto
1953-58	Associate Professor	Mathematics	University of Toronto
1958-1969	Professor	Mathematics	University of Toronto
1969-70	Professor	Mathematics	University of Hawaii
		Hired by the Chair Paul R Halmos	
1970-77	Professor	Mathematics	University of Toronto
1977-83	Professor & Chairman	Statistics	University of Toronto
1983-present	Professor	Statistics	University of Toronto
1984-86	Adjunct Professor	Mathematics	York University
1986-1995	Professor	Mathematics	York University
1984-present	Adjunct Professor	Statistics	University of Waterloo

VISITING APPOINTMENTS

1955	Associate Professor	Mathematics	Princeton University
1961-62	Professor	Statistics	Stanford University
1964	Professor	Statistics	University of Copenhagen
1965	Professor	Statistics	University of Wisconsin
1978-79	Professor	Mathematics	University of Geneva
1982-83	Professor	Statistics	Stanford University

2002-03	Professor	Mathematics	EPFL Lausanne
2012	Visiting Professor	Statistics	University College London
2013	Visiting Professor	Statistics & Actuarial Science	University of Hong Kong

HONOURS & AWARDS

1946	Putnam Competition, Winning Team
1949	Member, Sigma Xi
1954	Fellow, Institute of Mathematical Statistics
1956	Fellow, Royal Statistical Society
1962	Fellow, International Statistical Institute
1962	Fellow, American Statistical Association
1963	Professorship, Princeton Mathematics offered; unable to accept
1967	Fellow, Royal Society of Canada
1971	Fellow, American Association for the Advancement of Science
1985	First Gold Medal, Statistical Society of Canada
1990	R.A. Fisher Award and Prize, American Statistical Association

Annual Meeting, August 8, Anaheim, California

1991	Honorary Member, Statistical Society of Canada
1992	Doctor of Mathematics, University of Waterloo, June 30
1999	Distinguished Statistician, American Statistical Asociation Videotape Archives.
2000	Gold Medal, Islamic Statistical Society.
2002	Doctor of Science, University of Toronto, June 24
2011	Officer of the Order of Canada, December 16
2012	Queen Elizabeth II Diamond Jubilee Medal, June 25
2013	Saw Swee Hock Visitiing Professorship, University of Hong Kong
2014	Fellow of the American Mathematical Society, 2015 Class of Fellows

PROFESSIONAL AFFILIATIONS AND ACTIVITIES

Associate Editor *Journal of Multivariate Analysis*
Associate Editor *Statistical Papers*
Associate Editor *Utilitas Mathematica*
Associate Editor *Theory and Decision Library*
Editorial Board *Journal Applied Probability and Statistics*
Advisory Comm. *International Conference on Applied Statistics 2014*

PH.D SUPERVISION

55 Ph.D. Students completed; 2 current students

PUBLICATIONS

BOOKS

1957	Nonparametric Methods in Statistics, New York: Wiley
1958	Statistics: An Introduction, New York: Wiley

1968   The Structure of Inference, 1968, New York: Wiley

1976   Probability and Statistics, Theory and Applications,
North Scituate, Massachusetts: Duxbury

1979   Inference and Linear Models, New York: McGraw Hill

PAPERS

1. Fraser, D.A.S. (1950). Note on the χ^2-smooth test. *Biometrika* **37**, 447–448.

2. Fraser, D.A.S. (1951). Generalized hit probabilities with a Gaussian target. *Ann. Math. Statist.* **22**, 248–255.

3. Fraser, D.A.S., and Wormleighton, R. (1951). Nonparametric estimation IV. *Ann. Math. Statist.* **22**, 294–298.

4. Fraser, D.A.S. (1951). Sequentially determined statistically equivalent blocks. *Ann. Math. Statist.* **22**, 372–381.

5. Fraser, D.A.S. (1951). Normal samples with linear constraints and given variances. *Can. J. Math.* **3**, 363–366.

6. Baillie, D.C., and Fraser, D.A.S. (1951). The statistical analysis of the Rosvold and Mishkin data. *Can. J. Psych.* **5**, 82–84.

7. Fraser, D.A.S. (1952). Sufficient statistics and selection depending on the parameter. *Ann. Math. Statist.* **23**, 417–425.

8. Fraser, D.A.S. (1952). Confidence bounds for a set of means. *Ann. Math. Statist.* **23**, 575–585.

9. Fraser, D.A.S., and Guttman, I. (1952). Bhattacharyya bounds without regularity assumptions. *Ann. Math. Statist.* **23**, 629–632.

10. Fraser, D.A.S. (1953). Nonparametric tolerance regions. *Ann. Math. Statist.* **24**, 44–55.

11. Fraser, D.A.S. (1953). Generalized hit probabilities with a Gaussian target II. *Ann. Math. Statist.* **24**, 288–294.

12. Fraser, D.A.S. (1953). The Behrens-Fisher problem for regression coefficients. *Ann. Math. Statist.* **24**, 390–402.

13. Fraser, D.A.S. (1953). Completeness of order statistics. *Can. J. Math.* **6**, 42–45.

14. Fraser, D.A.S. (1953). Non-parametric theory: Scale and location parameters. *Can. J. Math.* **6**, 46–68.

15. Fraser, D.A.S. and Guttman, I. (1956). Tolerance regions. *Ann. Math. Statist.* **27**, 162–179.

16. Fraser, D.A.S. (1956). A vector form of the Wald-Wolfowitz-Hoeffding theorem. *Ann. Math. Statist.* **27**, 540–543.

17. Fraser, D.A.S. (1956). Sufficient statistics with nuisance parameters. *Ann. Math. Statist.* **27**, 838–842.

18. Fraser, D.A.S. (1957). A regression analysis using the invariance method. *Ann. Math. Statist.* **28**, 517–520.

19. Fraser, D.A.S. (1957). On the combining of interblock and intrablock estimates. *Ann. Math. Statist.* **28**, 814–816.

20. Fraser, D.A.S. (1957). Most powerful rank-type tests. *Ann. Math. Statist.* **28**, 1040–1043.

21. Chung, J.H., and Fraser, D.A.S. (1958). Randomization tests for a multivariate two-sample problem. *J. Amer. Statist. Assoc.* **53**, 729–735.

22. Fraser, D.A.S. (1961). On fiducial inference. *Ann. Math. Statist.* **32**, 661–676.

23. Fraser, D.A.S. (1961). The fiducial method and invariance. *Biometrika* **48**, 261–280.

24. Fraser, D.A.S. (1962). On the consistency of the fiducial method. *J. Roy. Statist. Soc.* **B24**, 425–434.

25. Fraser, D.A.S. (1963). On sufficiency and the exponential family. *J. Roy. Statist. Soc.* **B25**, 115–123.

26. Fraser, D.A.S. (1963). On the sufficiency and likelihood principles. *J. Amer. Statist. Assoc.* **58**, 641–647.

27. Fraser, D.A.S. (1964). On the definition of fiducial probability. *Bull. Int. Statist. Inst.* **40**, 842–856.

28. Fraser, D.A.S. (1964). On local unbiased estimation. *J. Roy. Statist. Soc.* **B26**, 46–51.

29. Fraser, D.A.S. (1964). Local conditional sufficiency. *J. Roy. Statist. Soc.* **B26**, 52–62.

30. Fraser, D.A.S. (1964). Fiducial inference for location and scale parameters. *Biometrika* **51**, 17–24.

31. Fraser, D.A.S. (1964). On local inference and information. *J. Roy. Statist. Soc.* **B26**, 253–260.

32. Fraser, D.A.S. (1965). On information in statistics. *Ann. Math. Statist.* **36**, 890–896.

33. Fraser, D.A.S. (1965). Fiducial consistency and group structure. *Biometrika* **52**, 55–65.

34. Fraser, D.A.S. (1966). Structural probability and a generalization. *Biometrika* **53**, 1–9.

35. Fraser, D.A.S. (1966). Sufficiency for regular models. *Sankhya* **A28**, 137–144.

36. Fraser, D.A.S. (1966). On sufficiency and conditional sufficiency. *Sankhya* **A28**, 145–150.

37. Fraser, D.A.S. (1966). Sufficiency for selection models. *Sankhya* **A28**, 329–334.

38. Fraser, D.A.S. (1967). Sufficiency or conditional sufficiency. *Sankhya* **A29**, 239–244.

39. Fraser, D.A.S. (1967). Statistical models and invariance. *Ann. Math. Statist.* **38**, 1061–1067.

40. Fraser, D.A.S. (1967). Data transformations and the linear model. *Ann. Math. Statist.* **38**, 1456–1465.

41. Fraser, D.A.S. (1967). The basis of inference. *Trans. Roy. Soc. Canada* **V**, 227–231.

42. Fraser, D.A.S. (1968). The conditional Wishart: normal and nonnormal. *Ann. Math. Statist.* **39**, 593–605.

43. Fraser, D.A.S. (1968). A black box or a comprehensive model. *Technometrics* **10**, 219–229.

44. Fraser, D.A.S. (1968). Fiducial inference. *International Encyclopedia Social Sciences.* The Macmillan Company and The Free Press, 403–406.

45. Fraser, D.A.S., and Haq, M.S. (1969). Structural probability and prediction for the multivariate model. *J. Roy. Statist. Soc.* **B31**, 317–331.

46. Ali, M.M., Fraser, D.A.S., and Lee, Y.S. (1970). Distribution of the correlation matrix. *J. Statist. Research* **4**, 1–15.

47. Fraser, D.A.S. and Haq, M.S. (1970). Inference and prediction for the multilinear model. *J. Statist. Research* **4**, 93–109.

48. Fraser, D.A.S., and Prentice, R.L. (1971). Randomized models and the dilution and bioassay problems. *Ann. Math. Statist.* **42**, 141–146.

49. Fraser, D.A.S. (1972). Events, information processing, and the structured model. In V.P. Godambe and D.A. Sprott (Eds.), *Foundations of Statistical Inference*, 32–55. Toronto: Holt, Rinehart and Winston.

50. Fraser, D.A.S. (1972). Bayes, likelihood, or structural. *Ann. Math. Statist.* **43**, 777–790.

51. Fraser, D.A.S. (1972). The determination of likelihood and the transformed regression model. *Annals Math. Statist.* **43**, 898–916.

52. Fraser, D.A.S., and Streit, F. (1972). On the Behrens-Fisher Problem. *Aust. J. Statist.* **14**, 167–171.

53. Fraser, D.A.S. (1972). Is the statistical model flat? In C.S. Carter et al (Eds.), *Proceedings of the First Conference in Applied Statistics; Statistics '71 Canada.* Montreal, 83–86.

54. Fraser, D.A.S. (1973). On statistical analysis. *Inference and Decision* **I**, 17–22.

55. Fraser, D.A.S. (1973). The elusive ancillary. In D.G. Kabe, R.P. Gupta (Eds.), *Multivariate Statistical Inference*, 41–48. Amsterdam: North Holland Publishing Company.

56. Fraser, D.A.S. (1973). Inference and redundant parameters. *Multivariate Analysis* **III**, 143–156. New York: Academic Press.

57. Fraser, D.A.S., and MacKay, J. (1975). Parameter factorization and inference based on significance, likelihood, and objective posterior. *Ann. Statist.* **3**, 559–572.

58. Fraser, D.A.S. (1973). Comments on post-data two sample tests of location. *J. Amer. Statist. Assoc.* **68**, 97–106.

59. Fraser, D.A.S. (1973). Comments on the marginalization paradoxes. *J. Roy. Statist. Soc.* **B35**, 225–228.

60. Fraser, D.A.S. (1974). Comparison of inference philosophies. In G. Menges (Ed.), *Information, Inference and Decision*, 77–98. Dordrecht: D. Reidel Publishing Company.

61. Fraser, D.A.S., and MacKay, Jock. (1976). On the equivalence of standard inference procedures. In Harper and Hooker (Eds.), *Foundations of Probability Theory, Statistical Inference, and Statistical Theories of Science* **II**, 47–62. Dordrecht: D. Reidel Publishing Companyng.

62. Fraser, D.A.S. (1976). Necessary analysis and adaptive inference. *J. Amer. Statist. Assoc.* **71**, 99–110, 112–113.

63. Fraser, D.A.S., and Fick, G.H. (1975). Necessary analysis and its implementation, Proceedings of the Symposium on Statistics and related topics, *Carleton Mathematical Notes* **12**, 5.01–5.30.

64. Fraser, D.A.S., Guttman, I., and Styan, G.P.H. (1976). Serial correlation and distributions on the sphere. *Comm. in Statist.* **A5(2)**, 97–118.

65. Fraser, D.A.S. (1976). Comments on strong inconsistency from uniform priors. *J. Amer. Statist. Assoc.* **71**, 122–123.

66. Fraser, D.A.S. (1976). Comments on rereading R.A. Fisher. *Ann. Statist.* **4**, 488–489.

67. Fraser, D.A.S., and Ng, K.W. (1977). Inference for the multivariate regression model. *Multivariate Analysis* **IV**, 35–53. Amsterdam: North Holland Publishing Co.

68. Fick, G., and Fraser, D.A.S. (1976). Robustness with structural methods. *Ball State University Proceedings*, 75–93. Indiana, Muncie.

69. Fraser, D.A.S. (1977). Confidence, posterior probability, and the Buehler example. *Ann. Statist.* **5**, 892–898.

70. Brenner, D., and Fraser, D.A.S. (1979). On foundations for conditional probability with statistical models – when is a class of functions a function? *Statistische Hefte* **20**, 148–159.

71. Bishop, L., Fraser, D.A.S., and Ng, K.W. (1979). Some decompositions of spherical distributions. *Statistische Hefte* **20**, 1–22.

72. Fraser, D.A.S. (1977). Comments on resolving the controversies in statistical inference. *J. R. Statist. Soc.* **B39**, 154–155.

73. Evans, M., and Fraser, D.A.S. (1980). An optimum tolerance region for multivariate regression. *J. Mult. Anal.* **10**, 268–272.

74. Fraser, D.A.S., and Ng, K.W. (1980). Multivariate regression analysis with spherical error. *Multivariate Analysis* **V**, 369–386. Amsterdam: North Holland Publishing Co.

75. Fraser, D.A.S. (1980). Inference and the structural model for Anova and Manova. In P.R. Krishnaiah (Ed.), *Handbook of Statistics* **1**, 389–406. Amsterdam: North Holland Publishing Co.

76. Fraser, D.A.S. (1979). Comments on conditional independence. *J. R. Statist. Soc.* **B41**, 22.

77. Feuerverger, A., and Fraser, D.A.S. (1980). Categorical information and the singular linear model. *Canad. J. Statist.* **8**, 41–45.

78. Fraser, D.A.S. (1979). Comments on reference posterior distributions for Bayesian inference. *J. R. Statist. Soc.* **B41**, 136.

79. Fraser, D.A.S., and McDunnough, P. (1980). Some remarks on conditional and unconditional inference for location-scale models. *Statistische Hefte* **21**, 224–231.

80. Brenner, D., and Fraser, D.A.S. (1980). The identification of distribution form. *Statistische Hefte* **21**, 296–304.

81. Fraser, D.A.S. (1980). Comments on some statistical paradoxes and non-conglomerability. *Bayesian Statistics*, 56–58. Valencia: University Press.

82. Brenner, D., and Fraser, D.A.S. (1981). A simplification of the traditional statistical model in the presence of symmetry. *Statistische Hefte* **22**, 195–206.

83. Brenner, D., and Fraser, D.A.S. (1980). An analytic-algebraic approach to statistical models and inference. *Mathematical Reports of the Academy of Science* **II**, 89–93.

84. Brenner, D., Fraser, D.A.S., and McDunnough, P. (1982). On asymptotic normality of likelihood and conditional analysis. *Can. J. Statist.* **10**, 163–172.

85. Fraser, D.A.S., and Streit, F. (1980). A further note on the bivariate normal distribution. *Comm. Statist. Th. Meth.* **A9**, 1097–1099.

86. Brenner, D., Fraser, D.A.S., and Monette, G. (1981). Theories of inference or simple additives. *Statistische Hefte* **22**, 231–233.

87. Fraser, D.A.S. (1983). Statistical Inference. *Encyclopedia of Statistical Sciences* **4**, 105–114.

88. Brenner, D., Fraser, D.A.S., and McDunnough, P. (1981). Transformation-parameter/ structural models: Asymptotic conditional distributions. *Mathematical Reports of the Academy of Science* **3**, 49–53.

89. Brenner, D., and Fraser, D.A.S. (1982). On the foundations: statistical models and inference. *Canad. J. Statist.* **10**, 155–161.

90. Evans, M., Fraser, D.A.S., and Massam, H. (1982). The Weibull model, objective form, and linear analysis. *Statistische Hefte* **23**, 110–115.

91. Brenner, D., Fraser, D.A.S., and Monete, G. (1983). On models and theories of inference: structural or pivotal analysis. *Statistische Hefte* **24**, 7–19.

92. Brenner, D., Evans, M., Fraser, D.A.S., Massam, H.,and Rost, E. (1984). The identification of distribution form, II. *Statistische Hefte* **25**, 61–68.

93. Fraser, D.A.S., and McDunnough, P. (1984). Further remarks on asymptotic normality of likelihood and conditional analysis. *Canad. J. Statist.* **12**, 183–190.

94. Evans, M.J., Fraser, D.A.S., and Monette, G. (1986). On principles and arguments to likelihood *Canad. J. Statist.* **14**, 181–199.

95. Fraser, D.A.S. (1982). Comment on the functional-model basis of fiducial inference. *Ann Statist.* **10**, 1070–1073.

98. Brenner, D., Fraser, D.A.S., Menges, G., and Rost, E. (1982). Model analysis with structural and stochastic partial information. *Statistische Hefte* **23**, 134–141.

99. Brenner, D., and Fraser, D.A.S. (1983). Comment on Barnard's Pivotal Inference. *Proceedings of the 1981 Bayesian Symposium at the University of Wisconsin*. Madison.

100. Fraser, D.A.S. (1985). Statistical Modelling. In E.Schneeweiss, H. Streker (Eds.), *Contributions to Econometrics and Statistics today*, 89–100. Berlin: Springer-Verlag.

102. Evans, M., Fraser, D.A.S., and q! , G. (1985). On the role of principles in statistical inference. In K. Matusita (Ed.), *Statistical Theory and Data Analysis*, 225-231. New York: North-Holland.

104. Evans, M., Fraser, D.A.S., and Monette, G. (1985). Mixtures, embedding, and ancillarity. *Canad. J. Statist.* **13**, 1–6.

106. Fraser, D.A.S., Monette, G., and Ng, K.W. (1985). Marginalization, likelihood, and structured models. *Multivariate Analysis* **VI**, 209–217. New York: North-Holland.

107. Fraser, D.A.S. (1988). Structural models. *Encyclopedia of Statistical Sciences* **9**, 27–32.

108. Fraser, D.A.S. (1988). Structural inference, *Encyclopedia of Statistical Sciences* **9**, 20–27.

110. Fraser, D.A.S., and Gebotys, R.J. (1987). Non-nested linear models: a conditional confidence approach. *Can. J. Statist.* **15**, 375–386.

114. Evans, M., Fraser, D.A.S., and Monette, G. (1985). On regularity for statistical models. *Can. J. Statist.* **13** 137–144.

115. Fraser, D.A.S., and Massam, H. (1987). Second-order inference for generalized least squares. *Can. J. Statist.* **15**, 21–30.

117. Fraser, D.A.S., and McDunnough, P. (1988). On generalization of the analysis of variance. *Annals Inst. Statist. Math.* **40**, 353–366.

118. Fraser, D.A.S. (1988), Rotation group, *Encyclopedia of Statistical Sciences* **8**, 189–190.

119. Fraser, D.A.S. (1986), Reduced model, *Encyclopedia of Statistical Sciences* **7**, 658–659.

120. Fraser, D.A.S., and Massam, H. (1985). Conical tests: Observed levels of significance and confidence regions. *Statistische Hefte* **26**, 1–17.

121. Fraser, D.A.S., and Sackey, S.E. (1986). Prior-likelihood factorization and missing data. *Comm. Statist. Th. Meth.*, **15(11)**, 3321–3331.

122. Fraser, D.A.S. (1987) Statistics, foundations. *Encyclopedia of Physical Science and Technology* **13**, 286–297.

123. Fraser, D.A.S., and Massam, H. (1989). A mixed primal-dual bases algorithm for regression under inequality constraints; application to concave regression. *Scand. J. Statist.* **16**, 65–74.

124. Evans, M., Fraser, D.A.S., and Monette, G. (1987). Statistical principles and tangent models. In I.B. MacNeill, G.J. Umphrey (Eds.), *Foundations of Statistical Inference*, 21–29. Dordrecht: D. Reidel.

125. Fraser, D.A.S., and Massam, H. (1987). An algorithm for concave regression. In I.B. MacNeill, G.J. Umphrey (Eds.), *Foundations of Statistical Inference*, 121–132. Dordrecht: D. Reidel.

127. Fraser, D.A.S. (1985). Comment on the resolution of Godambe's paradox. *Can. J. Statist.* **13**, 298–299.

128. Brenner, D., Fraser, D.A.S., and Monette, G. (1985). On models and theories of inference; Structural of pivotal analysis *Waterloo Symposium on Statistical Inference*, Waterloo: University of Waterloo, Department of Statistics, 52–62.

129. Fraser, D.A.S. (1987). Fibre analysis and tangent models. *Statistische Hefte* **28**, 163–181.

130. Fraser, D.A.S., and Massam, H. (1988). Location inference on spheres and cylinders. *J. Statist. Plan. Inf.* **18**, 195–201.

131. Fraser, D.A.S. (1987). Sequential parameter structure, conditional inference, and likelihood drop. *Statistische Hefte* **28**, 27–52.

132. Fraser, D.A.S. (1986). Comment on parameter orthogonality and approximate conditional inference. *J. Royal Statist. Soc.* **B49**, 29.

133. Dobriyal, A., Gebotys, R., and Fraser, D.A.S. (1987). Linear calibration and conditional inference. *Comm. Statist.* **16(4)**, 1037–1048.

134. Fraser, D.A.S., and Reid, N. (1988). On conditional inference for a real parameter: a differential approach on the sample space. *Biometrika* **75**, 251–264.

135. Fraser, D.A.S., and Reid, N. (1988). Fibre analysis and conditional inference. In K. Matusita (Ed.), *Proceedings of the Second Pacific Area Statistical Conference, Statistical Theory and Data Analysis* **II**, 241–247. North Holland.

136. Dobriyal, A., Fraser, D.A.S., and Gebotys, R. (1987). Approximate conditional inference and the linear functional model. *Comm. Statist. Th. Meth.* **16(12)**, 3729–37.

137. Fraser, D.A.S., McDunnough, P., and Reid, N. (1987). Some aspects of conditioning. In M.S. Haq, S.B. Provost (Eds.), *Recent Developments in Statistics and Actuarial Science*, 1–13. London, Ontario: Scitex.

138. Fraser, D.A.S., and Reid, N. (1988). On comparing two methods for approximate conditional inference. *Statistische Hefte* **29**, 271–280.

139. Fraser, D.A.S. (1988). Normed likelihood as saddlepoint approximation. *J. Mult. Anal.* **27**, 181–193.

140. DiCiccio, T.J., Field, C.A., and Fraser, D.A.S. (1990). Approximations of marginal tail probabilities and inference for scalar parameters. *Biometrika* **77**, 77–95.

141. Fraser, D.A.S., and Reid, N. (1989). Adjustments to profile likelihood, *Biometrika* **76**, 477–488.

142. Fraser, D.A.S., Reid, N., and Wong, A. (1991). Exponential linear models: a two pass procedure for saddle point approximation. *J. R. Statist. Soc.* **B 53**, 483–492.

143. Fraser, D.A.S. (1990). Tail probabilities from observed likelihoods. *Biometrika* **77**, 65–76.

144. Reid, N., and Fraser, D.A.S. (1989). Comments on the geometry of asymptotic inference. *Statist. Sci.* **4**, 231–233.

145. Fraser, D.A.S., Lee, H.S., and Reid, N. (1990). Nonnormal linear regression, an example of significance levels in high dimensions. *Biometrika* **77**, 333–341.

146. Fraser, D.A.S., Reid, N., and Wong, A. (1997). Simple and accurate inference for the mean of the gamma model. *Canad. J. Statist.* **25**, 91–99.

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148. Fraser, D.A.S., and Reid, N. (1990). Statistical inference: on theoretical methods and directions. *Environmetrics* **1**, 21–35.

149. Fraser, D.A.S., and Reid, N. (1991). Converting observed likelihoods to tail probabilities, *Comput. Statist. Data Anal.* **12**, 179–185.

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150. Fraser, D.A.S. (1990). Views on conditional and marginal methods of statistical inference. *Statistische Hefte* **31**, 83–93.

151. Fraser, D.A.S., and Reid, N. (1990). Discussion of an ancillarity paradox which appears in multivariate regression. *Ann. Statist.* **18**, 503–507.

152. Fraser, D.A.S., McDunnough, P., Naderi, A., and plante , A. (1995). On the definition of probability densities and the sufficiency of the likelihood map. *J. Prob. Math. Statist.* **15**, 301–310.

153. Fraser, D.A.S. (1990). On R.A. Fisher *Chance* **3**, 30.

155. Fraser, D.A.S. (1990). Comment on inferential estimation, likelihood, and linear pivotals. *Can. J. Statist.* **18**, 14–15.

156. Fraser, D.A.S., Guttman, I., and Srivastava, M.S. (1991). Conditional inference for treatment and error in multivariate analysis, *Biometrika* **78**, 565–72.

157. Fraser, D.A.S. (1991). On properties of sufficiency and statistical tests. In Kotz, S., and Johnson, L.J. (Eds.), *Breakthroughs in Statistics* **I**, 109–112. New York: Springer-Verlag.

158. Fraser, D.A.S. (1993). Directional tests and statistical frames. *Statistical Papers* **34**, 213–236.

159. Fraser, D.A.S. (1991). Statistical inference: Likelihood to significance. *J. Amer. Statist. Assoc.* **86**, 258–265.

160. Cheah, P.K., Fraser, D.A.S., and Reid, N. (1994). Multiparameter testing in exponential models: third order approximations from likelihood. *Biometrika* **81**, 271–278.

161. Cheah, P.K., Reid, N., Fraser, D.A.S., and Tapia, A. (1992). Third order asymptotics: connections among test quantities. *Comm. Statist Th. Meth.* **21(8)**, 2127–33.

162. Fraser, D.A.S., and Wong, A.C.M. (1993). Approximate Studentization with marginal and conditional inference. *Can. J. Statist.* **21**, 313–320.

163. Ennis, M., and Fraser, D.A.S. (1992). Higher order local unbiasedness with computer Algebra. *Comm. Statist. Th. Meth.* **21(11)**, 3171–3176.

164. Fraser, D.A.S. (1992). Sub-model selection and combination for statistical inference. In Saleh, A.K.Md.E. (Ed), *ProceedingsInternational Conference on Nonparametric Statistics and Related Topics*, 411–421. New York: Elsevier.

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RECENT INVITED ADDRESSES

89.1 Some directions for conditional inference. Inst. Math Statist. Lexington, KY. March 20, 1989

89.2 Statistical inference: its contributions and directions. Environmetrics Conference. Cairo. April 6, 1989

89.3 Statistical inference: on reduction methods and new directions. University of Windsor. April 26, 1989

89.4 Some recent results in inference. University of Madrid. June 9, 1989

89.5 Conditional and marginal methods of inference. Amer. Statist. Assoc., Washington. August 8, 1989

89.6 Some improvements for normal approximations in large samples. University of Montreal. October 4, 1989

89.7 Improvements to normal approximations in large samples. University of Toronto. October 10, 1989

89.8 Second order corrections to limiting normality in large samples. Amer. Math. Soc. meeting. Muncie, Indiana. October 27, 1989

89.9 Some improvements for the normal approximation. York University. November 30, 1989

89.0 Corrections to normality for inference. University of Waterloo. December 13, 1989

90.1 How close can a normal approximation be? University of Western Ontario. January 19, 1990

90.2 Processing likelihood to probability. Stanford University. February 20, 1990

90.3 Data analysis and statistical foundations. Conference on Data Analysis and Statistical Foundations Toronto, Ontario. June 1, 1990

90.4 Converting likelihood to significance. Statistical Society of Canada workshop. Niagara-on-the-Lake, Ontario. June 29, 1990

90.5 From likelihood to significance: Linking the Fisher concepts. R.A. Fisher lecture and prize. Anaheim, California. August 8, 1990

90.6 Statistical inference; likelihood to significance. Environmetrics International Meeting. Como, Italy. September 30, 1990

90.7 Some new approaches to conditional inference. McMaster University. October 9, 1990

90.8 Statistical inference as likelihood to significance. University of Waterloo. November 1, 1990

90.9 Likelihood functions and significance functions. Carleton University. November 23, 1990

91.1 Converting likelihood to significance. Uiversity of Western Ontario. February 1, 1991

91.2 Inference with semiparametric models. International Symposium on Nonparametric Methods. Carleton University. May 6, 1991

92.1 Some recent asymptotics in statistical inference. University of California, Santa Barbara. March 6, 1992

92.2 Higher order asymptotics with generalized linear models. International Symposium in Multivariate Analysis. Hong Kong. March 17, 1992

92.3 Some recent directions in statistical inference. Department of Statistics, University of Waterloo. June 29, 1992

92.4 Statistics as the meta language of science. Convocation address. University of Waterloo. June 30, 1992

92.5 Ancillaries and third order significance. Invited address, Institute Mathematical Statistics, Penn State University. October 26, 1992

93.1 Methods of third order Significance. International Symposium on Inference and Biostatistics. Guanajuato, Mexico. March 23, 1993

93.2 From likelihood to significance. University of South Florida. Tampa, Florida. April 9, 1993

93.3 Significance with nuisance parameters. Rutgers University, New Jersey. April 8, 1993

93.4 Towards closer connections between mathematics and statistics. 150 years of mathematics at the University of Toronto. May 15, 1993

94.1 Statistical inference and significance for scalar parameters. University of Waterloo. February 10, 1994

94.2 Objective priors for component parameters. Third Valencia Conference on Bayesian Statistics. Alicante, Spain. June 5, 1994

94.3 On Statistics and the Environment. Environmetrics Conference. Hamilton, Canada. August 18, 1994

94.4 Directions and approximations in statistical inference. Columbia Univ., Dept. of Statistics, New York. November 21, 1994

95.1 Directions in recent statistical inference. Dept of Statistics, Stanford University, California. February 28, 1995

95.2 Separating error, Nuisance effect, and interest effect. International Conference on Statistical Inference. Brixen, Italy. June 25, 1995

95.3 Asymptotics:Its contribution to the theory and methods of statistical inference. Institute of Mathematical Statistics. Montreal, Quebec. July 13, 1995

95.4 Priors and posteriors for scalar parameters. International Bayesian Conference. Oaxaca, Mexico. September 29, 1995

95.5 New theory in statistical inference. Dept of Statistics, Iowa State University. Ames, Iowa. November 3, 1995

95.6 Some recent methods in statistical inference. International Conference in Pure and Applied Mathematics. University of Bahrain, Bahrain. November 19, 1995

96.1 How do you like your likelihoods? Symposium on the Foundations of Statistical Inference. University of Waterloo. October 3, 1996

96.2 Data dependent priors for scalar interest parameters. Workshop on Default Bayesian Methodology. Purdue University. November 2, 1996

96.3 Nonsubjective priors for probability matching posteriors. 4th International Society Bayesian Analysis Meeting. Cape Town. December 17, 1996

97.1 Probability matching: the frequentist Bayesian Interface. University of Western Ontario. January 30, 1997

97.2 The problem of inference and likelihood asymptotics. Florida Atlantic University International Conference on Combinatorics, Graph theory, and Computing Boca Raton, Florida. March 4, 1997

97.3 The problem of inference and likelihood asymptotics. University of Toronto. January 30, 1997

97.4 The problem of inference and likelihood asymptotics. Nonparametric Statistics and Related Topics. Carleton University, Ottawa. May 5, 1997

97.5 Ancillary information for statistical inferencetics. International Conference on Multivariate Analysis. Hong Kong. June, 1997

97.6   Constructing second order ancillaries. CRM Workshop on Likelihood Asymptotics. Banff. July, 1997

97.7   The problem of inference and likelihood asymptotics. CRM University of Montreal, Montreal. November 10, 1997

98.1   Simple and accurate p-values. Dept of Statistics, Michigan State University. E Lansing, Michigan. March 24, 1998

98.2   Inference from likelihood asymptotics: simple and unique. University of California. Davis, California. April 20, 1998

98.3   Does the Bayesian need or want model information other than at the data point. Purdue University, Illinois. June 18, 1998

98.4   Some useful integrals for asymptotic densities: The mystery of hyper-accuracy. University of Montreal, Montreal. December 3, 1998

99.1   Some useful integrals for asymptotic densities: The mystery of hyper-accuracy. University of Chicago. January 13, 1999

99.2   Directions in likelihood asymptotics Statistical Society of Australia, Monash University, Melbourne, Australia. April 19, 1999

99.3   Recent directions in likelihood asymptotics. University of Sydney. Sydney, Australia. April 23, 1999

99.4   Strong matching of frequentist and Bayesian inference. International Workshop on Objective Bayesian Methodology. University of Valencia, Valencia. June 13, 1999

00.1   Likelihood asymptotics: Removing the singularities. Bernoulli-IMS World Congress. Guanajuato, Mexico. May 18, 2000

00.2   Ancillaries and Conditional Inference. Data Analysis and Statistical Foundations II, Fields Institute. Toronto, Canada. June 15, 2000

00.3   Default priors: Deference priors from Observed Information. Workshop on Inference and Asymptotics. Center Stefano Franscini. Ascona, Italy. July 10, 2000

00.4   Objective priors that defer to model shape. Third International Conference on Objective Bayes Methodology. Ixtapa. September 23, 2000

00.5   Objective Bayesian analysis based on model shape. Florida State University. September 29, 2000

00.6   Objective Bayesian analysis based on model shape. University of Western Ontario. November 30, 2000

00.7   Frequentist or objective Bayesian analysis. University of Waterloo. December 7, 2000

01.1   On the Bayesian frequentist interface. University of Toronto. January 11, 2001

01.2   Likelihood for interest parameters. Stern School of Business. New York University. March 30, 2001

01.3   Objective priors for scalar parameters. International Society for Bayesian Analysis. University of California Irvine. April 7, 2001

01.5   Economic models and modern likelihood analysis. Fox School of Business, Temple University. April 27, 2001

01.4   Some recent aspects of likelihood inference. Dalhousie University. November 8, 2001

02.1   Likelihood for component parameters. University of Western Ontario. January 10, 2002

02.2   Likelihood for component parameters. University of Waterloo. January 26, 2002

02.3   Is the future Bayesian or frequentist I. Fields Institute, Toronto. April 16, 2002

02.4   Is the future Bayesian or frequentist II. Fields Institute, Toronto. April 18, 2002

02.5   Direct Bayes for an interest parameter. Valencia 7, Tenerife. June 4, 2002.

02.6   Quarks and a bounded Poisson parameter. Padova, Italy. October 17, 2002 June 4, 2002.

02.7   How likelihood analysis gives simple inference results in general contexts. Swiss Federal Institute, Zurich November 15, 2002.

02.8   p-values without default priors. Workshop on Default priors, Granada, Spain December 7, 2002.

03.1   Student analysis and higher order likelihood theory. EPFL Lausanne. January 17, 2003

03.2   Recent likelihood theory: Analysis as simple as the Normal location scale case. University of Geneva. January 30, 2003.

03.3   Likelihood analysis and the SUR model. Dept of Econometrics, University of Geneva May 16, 2003.

03.4   Recent likelihood analysis. Dept of Computer Science, University of Fribourg. May 23, 2003.

04.1   Is there total inference? Saddlepoint and beyond. Dept of Mathematics, University of British Columbia January 15, 2004.

04.2   Statistical models and the implications. Dept of Statistics, University of Western Ontario February 5, 2004.

04.3   Model with data; What does it say? Dept of Statistics, University of Toronto. April 1, 2004.

04.4   Assessing vector parameters. Conference for Sir David Cox Neuchatel July 16, 2004.

04.5   Is there statistical inference? The Bayesian-frequentist divergence. Dept. of Statistics, Case Western Reserve University October 1, 2004.

05.1   Neutral priors. COBAL2 Baja, California, Mexico. February 6-10, 2005.

05.2   Why a prior? Dept of Statistics, Univ of Toronto Munk Centre April 28, 2005.

05.3   Objective and other priors. OBayes 5 Branson, Missouri. June 8, 2005.

05.4   What model information is appropriate for the Bayesian paradigm? Statistical Society of Canada, Annual meeting. Saskatoon, Saskatchewan. June 15, 2005.

05.5   Some thoughts on model based priors. Dept of Statistics, University of Waterloo Waterloo, Canada. November 17, 2005.

05.6   Should Bayesians and frequentists calibrate their parameters? Dept of Statistics, University of Western Ontario London, Canada. December 8, 2005.

06.1   Default priors for Bayesian and frequentist inference. Valencia 8, ISBA 2006 Benidorm, Spain. June 6, 2006.

06.2   Combining p-values from independent sources. International Conference on Nonparametric Statistics, Carleton University, Ottawa, Canada Sept 15, 2006.

06.3   Pivot or prior: the Bayesian-frequentist choice, Dept of Statistics, Simon Fraser University, Vancouver, B.C. November 17, 2006.

07.1   Data-based probability for parameter values, ORFE, Princeton University Princeton, New Jersey February 13, 2007.

07.2   Default priors for frequentist and Bayesian inference. Joint Statistical Meetings 2007 Salt Lake City, Utah July 31, 2007.

08.1   The Bayes myth - Probabilities. Or just approximate confidence. University of Western Ontario, London, Feb 7, 2008.

08.2   Bayesian posterior probability is just confidence and inconveniently needs linearity. McMaster University, April 1, 2008.

08.3   Parameter curvature and the Bayesian frequentist divergence. University of Wales, Gregynog, April 18, 2008.

08.4   Overview of parameter curvature. University of Wales, Gregynog, April 19, 2008.

08.5   The quantile function in statistical inference. Texas A. & M. University, May 12, 2008.

08.6   Some thoughts on the Bayesian-frequentist divergence. XLI Congreso Nacional de la Sociedad Matematica Mexicana, Valle de Bravo, Mexico. October 22, 2008.

08.7   Bayes linearity and confidence. Department of Statistics, Columbia University, NYC. November 24, 2008.

09.1   Likelihood, p-values, ancillaries and the vector quantile function. Statistical Laboratory, U of Cambridge, May 5, 2009.

09.2   Yanling Cai, Jean-François Plante, Ramya Thinniyam, D.A.S. Fraser. r vs r^* – Magic from Taylor Expansions. Statistical Society of Canada, Vancouver, June 2, 2009.

09.3   Can theory calibrate the tools in the statistical toolbox? Montreal Statistical Colloquium, University of Montreal, Montreal, Canada. November 6, 2009.

09.4   Curvature for the Bayes-frequentist disconnect. Canadian Mathematical Society, Winter meeting, Windsor, Canada. December 6, 2009.

10.1   Identity for Statistics: Calibration in Statistics DASF III Conference, Fields Institute, Toronto, Canada. May, 2010.

10.2   Higher Order Likelihood and the Curse of Curvature. Joint Statistical Meetings 2010. Vancouver, Canada August 5, 2010.

10.3   Continuity: A deeper role in statistical analysis. The 2nd Princeton Day of Statistics. Princeton University, Princeton, New Jersey. October 22, 2010.

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12.1   The Role of Bias in Statistics. Department of Statistics and Actuarial Sciences. University of Western Ontario. April 12, 2012.

12.2   Combining dependent likelihoods: some thoughts on composite likelihoods. Department of Statistical Science. University of Padova, Padova, Italy. September 24, 2012. (Padova2012.pdf)

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13.2   Statistical inference for parameters: p-values, inference intervals, distributions. Department of Statistics and Operations Research, University of North Carolina. April 3, 2013.

13.3   Why does statistics have two theories? Department of Mathematics and Statistics, Florida International University, April 12, 2013.

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14.1   Deciphering Bayes: Reproducibility? What accuracy? Department of Statistics, University of Southern California, Los Angeles, April 4, 2014 .

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14.3   How saddlepoint and continuity determine statistical inference Conference in honour of Malay Ghosh, College Park, Maryland , May 31, 2014 .

14.4   On resolving the Bayes enigma: How Jeffreys gives 2nd order Accuracy Second Conference of the International Society of Nonparametric Statistics: Invited address, Cadiz, Spain, June 13, 2014 .

15.1   Combining likelihood or p-value functions, with or without statistical independence. Western University, Dept. of Actuarial and Statistical Sciences April 9, 2015. (WU2015.pdf)

15.2   On direction in statistics theory. University of Toronto, Munk Institute April 29, 2015 .

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17.1   Distributions for *theta*: Validity and Risks BFF4 Conference, Harvard University May 1-3, 2017 . (BFF4-fraser.pdf)

18.1   What can we get from likelihood? A new prior for Bayes BFF5 Conference-Foundations of data science, University of Michigan May 6-9, 2018. (BFF5.pdf)

19.1   The statistical tool box: What can we get from likelihood Invited seminar speaker, Mathematics Department, Imperial College London Mar 22, 2019. (Imperial2019.pdf)

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