

## Brief Resume of Damaraju Raghavarao

### PRESENT POSITION

Laura H. Carnell Professor  
Chair, Department of Statistics  
Temple University  
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Philadelphia, Pennsylvania 19122  
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### EDUCATION

Ph.D., 1961. Bombay University (India). Statistics.  
M.A., 1957. Nagpur University (India). Pure Mathematics

### AWARDS, SCHOLARSHIP

Khan Bahadur H.M. Malak gold medal was awarded in 1957 for securing highest percentage of marks at the M.A. examination held in 1957.

Elected Fellow of the Institute of Mathematical Statistics, 1975.

Elected member of the International Statistical Institute, 1975.

Appointed as Laura H. Carnell Professor of Statistics in March, 1989 for the significant research contributions.

Elected Fellow of the American Statistical Association, 1990.

Awarded Paul W. Eberman Research Award by Temple University in May, 199 for significant overall research contributions.

A conference was held on October 2, 1999 celebrating 60th birthday and proceedings of the conference was published in "Recent Advances in Experimental Designs and Related Topics."

### EMPLOYMENT RECORD

Chairperson, Department of Statistics, Temple University 7/2004—

Laura H. Carnell Professor of Statistics, Temple University, 3/89—

Chairperson, Department of Statistics, Temple University, 7/87—9/91.

Acting Director, Data Analysis Laboratory, Temple University, 8/87—9/91.

Professor of Statistics, Temple University, 9/74.

Visiting Professor of Statistics, University of Guelph, Canada, 9/73-9/74.

Visiting Professor of Statistics, Biometrics Unit Cornell University, 6/73-8/73.

Visiting Professor of Statistics, University of North Carolina at Chapel Hill, N.C., 9/72-5/73.

Professor and Head of Mathematics and Statistics, Punjab Agricultural University, Ludhiana (India), 3/68-8/72.

Acting Professor and Head of Mathematics and Statistics, Punjab Agricultural University, Hissar Campus (India), 12/66-3/68.

Associate Professor of Mathematics and Statistics, Punjab Agricultural University, Hissar Campus (India), 1/65-12/66.

### RESEARCH PUBLICATIONS

#### List of Books Published

*Constructions and Combinatorial Problems in Design of Experiments*, Wiley series in Probability and Mathematical Statistics, New York, published in July 1971. Dover edition, 1988.

*Matrix Theory*, Oxford and IBH Publishing Company, New Delhi, published in April 1972.

*Statistical Techniques in Agricultural and Biological Research*, Oxford and IBH Publishing Company, India, published in 1983.

*Exploring Statistics*, Marcel Dekker, Inc., published in April, 1988.

(with M.M. Desu). *Sample Size Methodology*. Academic Press, published in October, 1990.

(with M.M. Desu). *Nonparametric Statistical Methods for Complete and Censored Data*, Chapman & Hall/CRC, published in September, 2003.

(with L.V. Padgett). *Block Designs: Analysis, Combinatorics and Applications*. World Scientific, 2005.

#### Selected Research Papers

Some Optimum Weighing Designs, *Ann. Math. Statist.*, 30, 295-303 (1959).

Some Aspects of Weighing Designs, *Ann. Math. Statist.*, 31, 878-884 (1960).

(with S.S. Shrikhande and S.K. Tharthare). Non-existence of Some Unsymmetrical Partially Balanced Incomplete Block Designs, *Canadian J.*

- Math.*, 15, 686-701 (1962).
- Singular Weighing Designs, *Ann. Math. Statist.*, 35, 673-680 (1964).
- (with S.S. Shrikhande). Affine  $\alpha$ -resolvable Incomplete Block Designs, *Contributions to Statistics*. Statistical Publishing Society, Calcutta, 471-480 (1964).
- Some Results on Tactical Configurations and Non-existence of Difference Set Solutions for Certain Asymmetrical PBIB Designs, *Ann. Inst. Statist. Math., Japan*, 22, 501-506 (1970).
- (with W.T. Federer). On Connectedness in Two-way Elimination of Heterogeneity Designs, *Ann. Statist.*, 2, 730-735.
- (with A. Hedayat). 3-way BIB Designs. *J. Combinatorial Theory*, 18A, 207-209 (1975).
- (with E. Seiden and A. Hedayat). Further Contributions to the Theory of F-square Designs, *Ann. Statist.*, 3, 712-716 (1975).
- (with K.R. Shah and C.G. Khatri). Optimality of Two and Three Factor Designs. *Ann. Statist.*, 4, 419-422 (1976).
- (with W.T. Federer). Application of BIB Designs as an Alternative to the Randomized Response Technique. *J. Royal Statist. Soc.*, 41B, 40-45 (1979).
- (with E.A. Blaisdell, Jr.). Partially Balanced Change-over Designs Based on m-Associate Class PBIB Designs. *J. Royal Statist. Soc.*, 42B, 334-338 (1980).
- A Review of the Construction and Combinatorial Problems in Block Designs. *Statistics: An Appraisal*. Proceedings of the 50th Anniversary Conference, Iowa State Statistical Laboratory, Ed. H.A. David and H.T. David. Iowa State University Press, 105-128 (1984).
- (with K.A. Bush, H. Pesotan and W.T. Federer). New Combinatorial Designs and their Applications to Group Testing. *J. Statist. Planning and Inf.*, 335-343
- (with W.T. Federer and S. J. Schwager). Characteristics for Distinguishing among Repeated Blocks. *J. Statist. Planning and Inf.*, 13, 151-163 (1986).
- (with C. Weideman). Some Optimum Non-Adaptive Hypergeometric Group Testing Designs for Identifying Two Defectives. *J. Planning and Inf.*, 16, 55-61 (1987).
- (with J. Pigeon). Some Contributions to Residual Effects Designs. *Biometrika*, 74, 321-328 (1987).
- (with W.T. Federer). Response Models and Minimal Designs for Mixtures of m Items useful for Intercropping and Other Investigations. *Biometrika*, 74, 571-577 (1987).
- Crossover Designs in Industry. Chapter in *Design and Analysis of Experiments with Applications to Engineering and Physical Science*, ed. Subir Ghosh. Dekker, 517-530 (1990).
- (with C. Narayanaswamy). Principal Component Analysis of Large Dispersion Matrices. *Applied Statistics*, 40, 309-316 (1991).
- (with S. Altan). Nested Youden Square Designs. *Biometrika*, 83, 242-245 (1996).
- (with K. DeWoody). Some Optimal Designs in Stability Studies. *J. Biopharmaceutical Statistics*, 31, 589-595 (1997).
- (with B. Zhou). Universal Optimality of Competing Effects Designs and UE 3- Designs. *Communications in Statistics*, 27, 153-164 (1998).
- Some Applications of Experimental Designs. "In Statistical Inference and Design of Experiments" Eds. V.J. Dixit and M.R. Satam, 92-98. *Narosa Publishing House*, New Delhi (1999).
- (with S. Altan). "A Class of Designs Using a Fold-over Hadamard Matrix for Screening Experiments." *Drug Information J.*, 34, 429-431 (2000).
- (with J. Antonello). "Optimal Designs for the Individual and Joint Exposure: General Logistic Regression Models." *J. Biopharm. Statist.*, 10, 351-367 (2000).
- (with L. Damaraju). "Fractional Plans to Estimate Main Effects and Two Fact Interactions Inclusive of a Specific Factor." *Biometrical J.*, 44, 780-785 (2002).
- (with Daozhi Zhang). "2" Behavioral Experiments Using Pareto Optimal Choice Sets." *Statistica Sinica*, 12, 1085-1092 (2002).
- (with Yang Xie). "Split-plot Type Cross-over Designs." *J. Statist. Planning and Inference*, 116, 197-207 (2003).

## Ph.D. Theses Supervised (in partial fulfillment of the degree requirements)

- K.R. Aggarwal, "Contribution to Partially Balanced Incomplete Block Designs with Special Reference to the Construction of Factorial Experiments." Punjab Agricultural University, India (1972).
- G. Nageswararao, "Contributions to the Design and Analysis of Non-orthogonal Designs." Punjab Agricultural University, India (1973).
- Rajinder Singh, "Applications of Combinatorial Problems in Sampling Theory." Punjab Agricultural University, India (1973).
- Roberto Mercado, "Generalized Residual Effects Designs." Temple University (1976).
- E.A. Blaisdell, Jr., "Partially Balanced Residual Effects Designs." Temple University (1978).
- Edward Lakatos, "Undiminished Residual Effects Designs and Their Applications in Survey Sampling." University of Maryland (1978).
- Annette L. Moore, "Extensions of Univariate Missing Plot Techniques to Bivariate Design Settings." Temple University (1983).
- Carol A. Weideman, "Non-Adaptive Hypergeometric Group Testing Designs for Almost Two Defectives." Temple University (1984).
- Joseph G. Pigeon, "Residual Effects Designs for Comparing Treatments with a Control." Temple University (1984).
- Hewa Saranadasa, "Discriminant Analysis Based on Some Concepts of Experimental Designs." Temple University (1991).
- Joseph M. Antonello, "Optimal Experimental Designs for Modeling Individual and Joint Dose Response Curves." Temple University (1996).
- Bei Zhou, "Contributions to Competing Effects Designs." Temple University (1997).
- Nandita Biswas, "Some Results on Residual Effects Designs." Temple University (1997).
- Kimberly DeWoody, "Some Optimal matrix Designs in Stability Studies." Temple University (1998).
- Paul DeLucca, "Effect of Investigator/Patient Bias on the Properties of Statistical Tests when Measuring Subjective Responses," Temple

University (1999).

Yang Xie, "Split-Plot Type Residual Effects Designs," Temple University (2000).

Paul Lupinacci, "D-Optimal Designs for a Class of Nonlinear Models," Temple University (2000).

Daozhi Zhang, "Pareto Optimal Designs in Behavioral Experiments," Temple University (2000).

Annpey Pong, "Comparing Designs for Stability Studies and Shelf Life Estimation for Drug Product with Multiple Components." Temple University (2001).

Elise Pales, "Mutually Nearly Orthogonal Latin Squares and their Applications." Temple University (2003).

Hongyan Zhang, "A Cox Proportional Hazard Model for Monotonic Severity Marked Failures," Temple University (2005).

### **Selected Talks Presented**

A Review of the Construction and Combinatorial Problems in Block Designs, at the Golden Jubilee Celebration of the Statistical Laboratory, Ames, Iowa, June 1983.

Some Optimum Non-adaptive Hypergeometric Group Testing Designs for Identifying Two Defectives, at the Keifer-Wolfowitz Memorial Conference, Cornell University, Ithaca, July 1983.

An Overview of Experimental Designs with Special Emphasis on Cross-over Designs, at Ciba-geigy Pharmaceutical One Day Seminar, November 1985.

Repeated Measurements Designs and Analysis, at the Forty-first Annual Conference on Applied Statistics (known as Princeton Conference), December 1985.

Testing Competing Effects among Soft Drink Brands, at the Conference to Honor Professor Walter T. Federer on his Retirement at Cornell University, Ithaca, June 1986.

Some Applications of Experimental Designs. Special Invited Talk at the Ninth Combined Annual Meeting of the ASA Chapters and SSC Regional Associations of Ottawa, Montreal and Southern Ontario and Carleton University Statistics Day, Ottawa, March 1991.

Agricultural Statistics vis-a-vis Statistics. Keynote address at the Inauguration of the 47th Annual Conference of the Indian Society of Agricultural Statistics at Tirupati (India) in December, 1993.

Dealing with Sensitive Questions. Invited talk at the Indian Council of Medical Research in January, 1994.

Sample Size Methodology at the Fifty-third Annual conference on Applied Statistics (known as Princeton Conference), December, 1997.

Construction of 3-Designs and PBRED's by the Method of Differences. Invited talk at the Bernoulli Conference, December, 1997 at Calcutta (India).

A Heuristic Analysis of Highly Fractionated Factorial Experiments. Invited talk at the Annual meetings of the Indian Study of Agricultural Statistics, December, 1998 at Hyderabad (India).

Some Applications of Orthogonal Arrays. Invited plenary talk at the Forum of Inter Disciplinary Mathematics, December, 1999 at Mobile (Alabama).

Designs in Market Research. Invited plenary talk at the conference of International Indian Statistical Association, June, 2002 at Dekalb (Ill.) Statistical Inferences Accounting for Human Behavior. Invited talk at International Conference on Recent Advances in Survey Sampling, July, 2002 at Ottawa.

Nonparametric Statistical Methods for Analyzing Complete and Censored Data from Block Designs, at the Fifty-ninth Annual Deming Conference, December, 2003, at Atlantic City, NJ.

Use of Hadamard Matrices in Identifying Expressed Genes, Invited Plenary talk at the International Conference in Design of Experiments, May, 2005 at Memphis, Tenn.