***Visiting Scholar 1:***

**Name of the Scholar : Prof. Hira Lal Koul, Michigan State University, USA**.

**Period of visit : 17 – 23, December 2010.**

Prof. Hira Lal Koul, Michigan State University, USA visited the Department of Statistics, CUSAT during 17 – 23, December 2010, to have discussion and deliver lectures under the ERUDITE scheme. During his visit Prof. Koul delivered a series of two technical lectures for the faculty, research scholars and students of the Department on the topics listed below. He also presented a popular talk for a larger audience, which was attended by the students and teachers of other Departments such as Economics, Mathematics, etc. The invitation for seminar was sent to all university centers and colleges with PG in Statistics in the state of Kerala. A press release was also given for the news papers. The lectures were arranged as per the following schedule:

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| --- | --- | --- | --- |
| **Sl.No** | **Date** | **Title of the Talk** | **Type of the Talk** |
| 1 | 17. 12. 2010 | Model Diagnostics in the presence of measurement error | Technical |
| 2 | 21.12. 2010 | Model Diagnostics via Khmaladze's Martingale Transform | Technical |
| 3 | 22. 12. 2010 | Model diagnostics in the presence of incomplete observations | Popular |

Apart from the above lectures Prof. Koul also spent a good amount of time in discussing the research problems with our research scholars and teachers of the Department. As a part of this program, Prof. Koul also visited the Department of Statistics, University of Kerala, Kariavattom and delivered a talk as well.

A brief bio data of Prof. Koul and copies of the abstracts of the talks are given below.

Prof. Hira Lal Koul

Chair Person

Department of Statistics & Probability

Michigan State University

East Lansing, MI. 48824-1027, USA.

Phone: 517-353-7170,

e-mail: koul@stt.msu.edu

**PROFESSIONAL EXPERIENCE:**

Teaching and Research Assistant, University of California, Berkeley, 1965-1967.

Assistant Professor, Michigan State University, 1968-1972.

Associate Professor, Michigan State University, 1972-1977.

Professor, Michigan State University, 1977 .

Visiting Fellow, La Trobe University, Australia, 1975-76.

Gave a series of lectures for one week on Robust Inferences at the Department of Statistics, The University of Sydney, Australia, July-August, 1975.

Visiting Professor, Poona University and I.S.I. New Delhi, India, 1982-1983. Funded by the University Grants Commission of India and the sabbatical leave from MSU.

Visiting Research Professor, La Trobe University, Summer 1985.

Guest Professor, Justus Liebig University, Giessen, W. Germany, Summer 1988; Funded by Deutsche Forschungsgemeinschaft.

Visiting Professor, University of Wisconsin, Madison, Fall 1989.

Visiting Scholar, Center for Stochastic Processes, Chapel Hill, NC, Winter, 1990.

Visiting Research Professor, Mathematical Science Research Institute, Berkeley, California, October, 1991.

Guest Professor, University of Vienna, Wien, AUSTRIA, November 1994.

Visiting Scholar, Center for Mathematics and Applications, A.N.U., Canberra, AUSTRALIA, May 15 - June 26, 1995.

O'Conner Fellow, Curtin University, AUSTRALIA, November-December 1995.

Humboldt Senior Research Scientist Awardee at the Universities of Giessen and Heidel-berg, September 1996 - June 1997.

Visiting Research Professor, University of New SouthWales, Sydney, AUSTRALIA, May-June 2000.

Visiting Research Professor, Hong Kong University of Science and Technology, December 4 - 14, 2001.

Invited to re-visit as a Humboldt Senior Research Scientist Awardee at the University of Giessen, June 1, 2002 - August 15, 2002.

Visiting Research Professor, Hong Kong University of Science and Technology, July 15-28, 2003.

Visiting Professor, University of Pune, December 12, 2003 - January 10, 2004.

Visiting Professor, North Carolina State University, Raleigh, NC, February 1, 2004 -March 10, 2004.

Visiting Professor, Universit¶e Libre de Bruxelles, Belgium, May 31 - July 4, 2004.

Visiting Research Professor, Hong Kong University of Science and Technology, June 14- 28, 2006.

Visiting Scholar, Victoria University, Wellington, NZ, July 6-15, 2006.

**RESEARCH INTERESTS:**

* Inference on Stochastic Processes: Long range dependence and Time Series Analysis.
* Non- and Semiparametric Inference; Efficient & Adaptive Estimation.
* Reliability Theory and Survival Analysis.
* Weak convergence of Stochastic Processes and their applications to Statistics.

**MERITS, PRIZES AND HONORS:**

*Merit Prize* for being among the ¯rst ten at B.A.*Indian Mathematical Golden Jubilee Prize* for standing ¯rst among all Masters of Arts students in 1964.

*Fellow* of the American Statistical Association.

*Fellow* of the Institute of Mathematical Statistics.

*Elected* member of the International Statistical Institute.

*O'Conner Fellow*, Curtin University, Perth, WESTERN AUSTRALIA

Awarded a *Humboldt Research Award* for Senior Scientists, October, 1995.

*President* of the International Indian Statistical Association, 2005-2006.

*Distinguished Faculty Award*, 2004-2005AY, Michigan State University.

*President* of the Indian Statistical Association, 2009{2011.

**ADMINISTRATIVE EXPERIENCE:**

*Chair*: Fall, 2009 ..... .

*Acting Chairman*: Department of Statistics and Probability, 1981-82.

*Served and/or serving* on many important department subcommittees, like Major

Curriculum, Personnel, Service Courses.

*Served* on Curriculum subcommittee of the College of Natural Science, 1988-1991.

*Member of Dean's subcommittee* in the College of Natural Science on Tenure and Promotion, 1987.

*Chair of Dean's subcommittee* in the College of Natural Science on Tenure and Promotion, 1988-1990.

EDITORIAL EXPERIENCE:

Co-Editor in Chief: *Statistics and Probability Letters,* July 2007 -.

Associate Editor:

*Statistics and Probability Letters,* from its beginning in July, 1982{ June 2007.

*Journal of Indian Statistical Association.* 1983 - 2001.

*Annals of Statistics, 1994.*

*Applicable Analysis and Discrete Mathematics*, 2002 .

Coordinating Editor: *J. Statistical Planning and Inference.* January 1995 December 2006.

Co-Editor:

*The J. Mathematical Sciences*, January 2002-

*Sankhya, Ser. A.* January 1997- December, 2001.

**REFEREEING AND REVIEWING**:

Referee papers for: Ann. Statist., Ann. Probab., J.A.S.A., J. Australian Statist. Ass.,, Sankhya, Z. Wahrscheinlichkeitst, J. Statist. Plan. and Infer., among others.

Reviewed numerous papers for the Math. Reviews and Zentralblatt fur Mathem.

Reviewed *Censoring and Stochastic Integrals* by R. D. Gill, for *J. Amer. Statist. Assoc.*, December, 1982

**MONOGRAPHS:**

* WEIGHTED EMPIRICALS AND LINEAR MODELS. (1992). IMS Lecture Notes-Monograph Series, Vol. 21. Hayward, California.
* PROCEEDINGS OF THE WORKSHOP ON ANALYSIS OF CENSORED DATA.(1996). IMS Lecture Notes-Monograph Series, Vol. 27. Hayward, California. (Co-Edited with J.V. Deshpande).
* SPECIAL ISSUE OF STATISTICS AND PROBABILITY LETTERS IN MEMORY OF V. SUSARLA. (1999).
* WEIGHTED EMPIRICAL PROCESSES IN DYNAMIC NONLINEAR MODELS, SECOND EDITION. Springer Lecture Notes in Statistics, 166, (2002).
* Frontiers in Statistics. Imperial College Press, London,UK (2006). (Co-Edited with Jianqing Fan).

**Ph.D supervised : 26**

**No. of research papers published over the years : more than 110.**

**ABSTRACTS**

**Technical Talk – 1**

**Date and Time : 17th December 2010 at 2 pm**

**Title: Model Diagnostics in the presence of measurement error**

**Abstract**

The problem of using information available from one variable *X* to make inferenceabout another *Y* is classical in many physical and social sciences. In statistics this isoften done via regression analysis where mean response is used to model the data. Onestipulates the model *Y* = *µ*(*X*) +ɛ*.* Here *µ*(*X*) is the mean response at the predictor variable value *X* = *x*, and ɛ= *Y - µ*(*X*)is the error. In classical regression analysis, both (*X; Y* ) are observable and one then proceeds to make inference about the mean response function *µ*(*X*). In practice there are numerous examples where *X* is not available, but a variable *Z* is observed which provides an estimate of *X*. As an example, consider the herbicidestudy of Rudemo, et al. [3] in which a nominal measured amount *Z* of herbicide was applied to a plant but the actual amount absorbed by the plant *X* is unobservable.

As another example, from Wang [5], an epidemiologist studies the severity of a lung disease, *Y* , among the residents in a city in relation to the amount of certain air pollutants. The amount of the air pollutants *Z* can be measured at certain observation stations in the city, but the actual exposure of the residents to the pollutants, *X*, is unobservable and may vary randomly from the *Z*-values. In both cases *X* = *Z*+*error:* This is the so called Berkson measurement error model.In more classical measurement error model one observes an unbiased estimator *W* of *X* and stipulates the relation *W* = *X* + *error:* An example of this model occurs when assessing effect of nutrition *X* on a disease. Measuring nutrition intake precisely within 24 hours is almost impossible. There are many similar examples in agricultural or medical studies, see e.g., Carroll, Ruppert and Stefanski [1] and Fuller [2], , among others. In this talk we shall address the question of fitting a parametric model to the re-gression function *µ*(*X*) in the Berkson measurement error model: *Y* = *µ*(*X*) + ɛ*; X* = *Z* + η*;* where ηand ɛare random errors with *E(*ɛ*)* = 0, *X* and ηare *d*-dimensional, and *Z* is the observable *d*-dimensional r.v.

**References**

[1] Carroll, R.J., Ruppert, D. & Stefanski, L.A. (1995). *Measurement Error in*

*Nonlinear Models*, Chapman & Hall/CRC, Boca Raton.

[2] Fuller, W.A. (1987). *Measurement Error Models*.Wiley, New York.

[3] Rudemo, M., Ruppert, D. & Streibig, J. (1989). Random e®ects models in nonlin-

ear regression with applications to bioassay. *Biometrics*, 45, 349-362.

[4] Wang, L. (2003). Estimation of nonlinear Berkson-type measurement errors models.

*Statist. Sinica.* 13, 1201-1210.

[5] Wang, L. (2004). Estimation of nonlinear models with Berkson measurement er-

rors.*Ann. Statist.* 32, 6, 2559-2579.