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ANTHROMATHEMATICS GROUP

Program in Sport and Anthromathematics

Publications and Presentations <http://anthromath.uok.edu.pk>

My Philosophy of Life

While there is a will there is a way

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Selected Research Contributions

- Snapshot of work in *Anthromathematics and Sport Mathematics*:
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- **Optimal-Mass Management in Obese Children**: ngds-ku.org/Papers/J38.pdf
Published in *International Journal of Biology and Biotechnology* — ISI-Indexed Journal
- **KJ-Regression Model to Evaluate Optimal Masses**: ngds-ku.org/Papers/J34.pdf
Published in *International Journal of Biology and Biotechnology* — ISI-Indexed Journal
- **Stunting Induced by Wasting – Wasting Induced by Stunting**: ngds-ku.org/Papers/J32.pdf
Published in *International Journal of Biology and Biotechnology* — ISI-Indexed Journal
- **Effects of Weak Electromag. Fields on Gl.-Electrocortical Act.**: ngds-ku.org/Papers/J13.pdf
Published in *Journal of Biological Physics* (Springer) — ISI IF (2014): **1.286**
- **Spacetime Representation of Global-Electrocortical Activity**: ngds-ku.org/Papers/J08.pdf
Published in *Biological Cybernetics* (Springer) — ISI IF (2014): **1.713**

[©] National Curriculum Revision Committee

[§] National Testing Service Pakistan

[#] American Institute of Aeronautics and Astronautics

[‡] The Abdus Salam International Center for Theoretical Physics, Trieste, Italy

^v The Aga Khan University Medical College, Karachi

[®] Higher Education Commission, Government of Pakistan

[¶] Transparency International Pakistan

[‡] International Brain Research Organization

[‡] The Early Talent Research Participation Program

^c National Growth and Developmental Standards for the Pakistani Children <http://ngds.uok.edu.pk>

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Key to Institutions

Albert Einstein College
Indiana University
Johns Hopkins University
Karachi University
Lund University

Oklahoma University
Sir Syed University

- For each item, the line containing **AUTHORSHIP(S)** mentions, in the left-hand column, name of the institution (listed, below, alphabetically), where the work was performed:

- The Albert Einstein College of Medicine, Bronx, New York 10461, USA
- Indiana University, Bloomington, Indiana 47405, USA
- The Johns Hopkins University, Homewood Campus, Baltimore, Maryland 21218, USA
- University of Karachi, University Road, Karachi 75270, Pakistan
- University of Lund, Malmö General Hospital (Spinal Unit), S-21401, Malmö, Sweden
- University of Oklahoma, Norman, Oklahoma 73019, USA
- The Sir Syed University of Engineering and Technology, University Road, Karachi 75300, Pakistan

Papers

- Papers in health, physical education and sports sciences:

2016*Abstract**PDF*

Karachi University

- Gait Analysis of 7-10-Year-Old Children of Karachi from Nutritional-Status Perspective

<http://www.ngds-ku.org/pub/jourabstB.htm#J41>:

<http://www.ngds-ku.org/Papers/J41.pdf> (full text)

KAMAL SA, *International Journal of Biology and Biotechnology* **13** (1), 2016 (in press)

2015*Abstract**PDF*

Karachi University

- US-Childhood-Obesity Problem: Solutions Proposed in Pakistan
The First- to the Third-Generation Solutions to childhood-obesity problem described

<http://www.ngds-ku.org/pub/confabstB.htm#C131>:

<http://www.ngds-ku.org/Presentations/Childhood-Obesity.pdf>

KAMAL SA, *the First International Conference on Life Sciences*, MAH Qadri Biological Research Center, University of Karachi, Karachi, Pakistan, December 27-29, 2015, pp 8, 9 — Invited Lecture

- Acute Malnutrition in a Child Suffering from Cardiac Problems

<http://www.ngds-ku.org/pub/jourabstB.htm#J40>:

<http://www.ngds-ku.org/Papers/J40.pdf> (full text)

KAMAL SA, *International Journal of Biology and Biotechnology* **12** (4), 2015, 585-600

- Designing Curricula of Mathematics, which Produce Leader-Integrator of Tomorrow

Describes 'Program in Sport and Anthromathematics'

<http://www.ngds-ku.org/pub/jourabstB.htm#J39>:

<http://www.ngds-ku.org/Papers/J39.pdf> (full text)

KAMAL SA, *Journal of Education and Research*, **3**, 2015, 13-44

- Research Empowering Teaching for Community Development: An Example from Sport-Mathematics Research

<http://www.ngds-ku.org/pub/confabstB.htm#C127>:

<http://www.ngds-ku.org/Presentations/Reseach-Teaching-ComDev.pdf>

KAMAL SA, *the Karachi University Second Educational Conference (Educational Issues in the Twenty-First Century)*, University of Karachi, Karachi, Pakistan, September 2, 2015 — Keynote Lecture

- Optimal-Mass Management in Obese Children

The Third-Generation Solution of childhood-obesity problem

<http://www.ngds-ku.org/pub/jourabstB.htm#J38>:

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KAMAL SA, *International Journal of Biology and Biotechnology* **12** (3), 2015, 381-391

- Papers (continued)**
Karachi University
Abstract
PDF
- Hairstyle, Clothing and Footwear for Gymnastic Activities in the Primary-School Setting
KAMAL SA, Khan SA, *Pamukkale Journal of Sport Sciences*, **6 (3)**, 2015, 46-67
<http://www.ngds-ku.org/pub/jourabstB.htm#J37>:
<http://www.ngds-ku.org/Papers/J37.pdf> (full text)
 - Effective Decision Making for Presence of Scoliosis
<http://www.ngds-ku.org/pub/jourabstB.htm#J36>:
<http://www.ngds-ku.org/Papers/J36.pdf> (full text)
 - Generating and Validating Growth-and-Obesity Roadmaps for the Pakistani Children
KAMAL SA, Sarwar M, Razzaq UA *International Journal of Biology and Biotechnology*, **12 (2)**, 2015, 317-328
- Abstract
PDF
Karachi University
- Medical Criteria for Induction into the Armed Forces of Pakistan: Cutoff Heights for Still-Growing Youth
KAMAL SA, Ansari SA, Sarwar M, *Pakistan Armed Forces Medical Journal*
- Submitted**
Karachi University
- 2014**
Abstract
PDF
Karachi University
- KJ-Regression Model to Evaluate Optimal Masses of Extreme Cases
<http://www.ngds-ku.org/pub/jourabstB.htm#J34>:
<http://www.ngds-ku.org/Papers/J34.pdf> (full text)
 - Growth-and-Obesity Enhanced-Roadmaps of Children
The Second-Generation Solution of childhood-obesity problem
<http://www.ngds-ku.org/pub/confabstB.htm#C125>:
<http://www.ngds-ku.org/Presentations/Enhanced.pdf>
KAMAL SA, Ansari SA, Jamil SS, *the Second Conference on Anthromathematics and Sport Mathematics in the Memory of (Late) Hussain Ahmed Bilgirami (ANTHROMATHEMATICS 2014)*, Department of Mathematics, University of Karachi, Karachi, Pakistan and Government College, Hyderabad, Pakistan, September 4, 2014, abstract#Anthro14-06, p 10
 - A Calibration Device for Moiré-Fringe-Topographic System
<http://www.ngds-ku.org/pub/confabstB.htm#C124>:
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 - Crystal-Structure-Concept-Based Modeling of the Human Spinal Column Validated through 3-D-Bone Scanning
<http://www.ngds-ku.org/pub/confabstB.htm#C123>:
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KAMAL SA, Sarwar M, Rajput MK, *the Second Conference on Anthromathematics and Sport Mathematics in the Memory of (Late) Hussain Ahmed Bilgirami (ANTHROMATHEMATICS 2014)*, Department of Mathematics, University of Karachi, Karachi, Pakistan and Government College, Hyderabad, Pakistan, September 4, 2014, abstract#Anthro14-04, p 8
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- Abstract*
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Karachi University
- A Security-cum-Background Rating System through Face Recognition employing Edge-Based Rasterstereography
<http://www.ngds-ku.org/pub/confabstB.htm#C121>:
<http://www.ngds-ku.org/Presentations/Rating.pdf>
KAMAL SA, Wasim M, *the Second Conference on Anthromathematics and Sport Mathematics in the Memory of (Late) Hussain Ahmed Bilgirami (ANTHROMATHEMATICS 2014)*, Department of Mathematics, University of Karachi, Karachi, Pakistan and Government College, Hyderabad, Pakistan, September 4, 2014, abstract#Anthro14-02, p 6 — Invited Lecture
- Abstract*
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Karachi University
- The Evolution of Anthromathematics (2010-2014)
<http://www.ngds-ku.org/pub/confabstB.htm#C120>:
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- Abstract*
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Karachi University
- Primary-Physical-Education Practices in Pakistan and England: Health and Safety Perspectives
<http://www.ngds-ku.org/pub/jourabstB.htm#J33>:
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- Effective Decision Making for Presence of Scoliosis Based on Moiré Fringe Topography
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- Stunting Induced by Wasting — Wasting Induced by Stunting: A Case Study
<http://www.ngds-ku.org/pub/jourabstB.htm#J32>:
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 Wasim M, **KAMAL SA**, Shaikh A, *International Journal of Biology and Biotechnology* **10 (4)**, 2013, 613-630
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- Fitness for Primary-School Children
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- From Simple X Rays to Bone Scanning using Backscatter-X Rays: A Journey of 113 Years
<http://www.ngds-ku.org/pub/confabstA.htm#C110>:
<http://www.ngds-ku.org/Presentations/Scan.pdf>
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- Abstract*
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- Gait as Indicator of CNS Problems as well as Trunk and Lower-Limb Deformities
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- Moiré Fringe Topography in Scoliosis Detection and Management
[http://www.ngds-ku.org/pub/confabstA.htm#C107:](http://www.ngds-ku.org/pub/confabstA.htm#C107)
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 - From Anthropometry to Anthrodynamics: A Bridge through Anthromathematics
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 Karachi University
- Diet-based Interventions and Vitamin-D Deficiency
 Helpful hints to overcome vitamin-D deficiency in children
[http://www.ngds-ku.org/pub/confabstA.htm#C105:](http://www.ngds-ku.org/pub/confabstA.htm#C105)
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 - Sensitivity and Specificity of Screening Tests
 Introduced concepts of relative sensitivity and relative specificity
[http://www.ngds-ku.org/pub/confabstA.htm#C104:](http://www.ngds-ku.org/pub/confabstA.htm#C104)
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 - Importance of Standardization of Anthropometric Protocols
 Factors affecting anthropometric measurements
[http://www.ngds-ku.org/pub/confabstA.htm#C103:](http://www.ngds-ku.org/pub/confabstA.htm#C103)
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 - Cumulative-Scoliosis-Risk Weightage (CSRW): Designing Preventive Strategies
[http://www.ngds-ku.org/pub/confabstA.htm#C102:](http://www.ngds-ku.org/pub/confabstA.htm#C102)
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 - Rasterstereography in Scoliosis Detection and Management
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- Papers (continued)**
Abstract
PDF
 Karachi University
- Optimal-Weight Management through Diet, Exercise and Lifestyle Adjustment
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- Abstract*
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- Growth-and-Obesity Roadmaps of Children
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- Abstract*
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 Karachi University
- Anthromathematics of the Human Spinal Column
 Differential-spinal-function testing proposed
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- Abstract*
PDF
 Karachi University
- 3-D-Spinal-Column-Surface Analysis (Height and Curvature Maps) by Combining Moiré Fringe Topography and Rasterstereography with Back-Scatter-X-Ray-Scanning Technology
[http://www.ngds-ku.org/pub/confabstA.htm#C97:](http://www.ngds-ku.org/pub/confabstA.htm#C97)
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KAMAL SA, *the First Undergraduate National Computing Conference*, Usman Institute of Technology, Karachi, Pakistan, May 30, 2013 — Keynote Lecture
- 2012**
- Abstract*
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 Karachi University
- Crystal-Structure Concepts Applied to Static and Dynamic Modeling of the Human-Spinal Column
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- Abstract*
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 Karachi University
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- 2011**
- Abstract*
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 Karachi University
- Growth-and-Obesity Profiles of Children of Karachi using Box-Interpolation Method
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- Papers (continued)*
- Abstract*
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Karachi University
- Anthromathematics of MUAC (Mid-Upper-Arm Circumference): Investigation of Reproducibility
<http://www.ngds-ku.org/pub/confabstA.htm#C90>:
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KAMAL SA, *the NGDS Pilot Project e-Publication*, May 23, 2013
 - 2012
PDF
Karachi University

 - Formulae for Assigning Scoliosis-Risk Weightage
http://www.ngds-ku.org/BLA/Scoliosis_Risk.pdf (full text)
KAMAL SA, *the NGDS Pilot Project e-Publication*, May 23, 2012
 - 2011
PDF
Karachi University

 - Growth-and-Obesity Monitoring of Primary-School Children in Schools Run by the Armed Forces of Pakistan
http://www.ngds-ku.org/ngds_folder/Growth_Monitoring.pdf (full text)
KAMAL SA, *the NGDS Pilot Project e-Publication*, May 23, 2011
 - Growth-and-Obesity Monitoring of Primary-School Children of Beacon Light Academy
http://www.ngds-ku.org/BLA/Growth_Monitoring_BLA.pdf (full text)
KAMAL SA, *the NGDS Pilot Project e-Publication*, May 23, 2011

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- 1997**
- What Can You Learn from the Way Your Child Walks?
http://www.ngds-ku.org/ngds_folder/art3.htm
<http://www.ngds-ku.org/Articles/A17.pdf> (full text)
KAMAL SA, *the News International (Karachi)*, August 26, 1997 (Technotalk Page)
- Full Text*
PDF
 Karachi University
- 1997**
- Moiré fringe Topography to Detect Scoliosis in Children
http://www.ngds-ku.org/ngds_folder/art2.htm
<http://www.ngds-ku.org/Articles/A16.pdf> (full text)
KAMAL SA, *the News International (Karachi)*, August 11, 1997 (Technotalk Page)
- Full Text*
PDF
 Karachi University
- 1997**
- How to Guard Against Curvatures of the Spinal Column in Children?
http://www.ngds-ku.org/ngds_folder/art1.htm
<http://www.ngds-ku.org/Articles/A14.pdf> (full text)
KAMAL SA, *the News International (Karachi)*, May 8, 1997 (Technotalk Page)
- Full Text*
PDF
 Karachi University
- 1988**
- Moiré Topography
KAMAL SA, *Physics Dialogue (Karachi)* **1**, March 1988, pp 16-17
- Karachi University
- Dissertation**
- Consisted of 3 new models of global electrocortical activity and a mathematical definition of brain death:
- 1989**
- Spacetime Representation in the Brain
<http://eprints.hec.gov.pk/1074/1/803.html.htm>
KAMAL SA, *PhD Dissertation*, 1989 (unpublished), 100 pages, 63 references
- Full Text*
 Karachi University
- Dissertations Supervised**
- Supervised dissertations of the following students for their work on face recognition (first student), modeling of child growth and obesity management (second student) and mathematical modeling of scoliosis management (third student):
- 2015**
- A Security System Employing Edge-Based Rasterstereography
 Wasim M, *PhD Dissertation* (final defence held on December 15, 2015)
 - Generating and Validating Growth-and-Obesity Roadmaps for the Pakistani Children
 Ansari SA, *PhD Dissertation* (submitted)
 - Effective Decision Making for Presence of Scoliosis using Moiré Fringe Topography
 Sarwar M, *PhD Dissertation* (submitted)
- Dissertations (in progress)**
- Growth-and-Obesity Vector-Roadmap Generated using Enhanced Anthropometric Techniques
 Naz AA, *PhD Dissertation*
 - Gait Analysis using Moiré Fringe Topography and Rasterstereography (Simultaneous Recording)
 Rajput MK, *PhD Dissertation*
 - Mathematical Modeling of Scoliosis Indicators in Growing Children
 Raza SK, *PhD Dissertation*
 - Validation of Concept of Optimal Mass in Children and Adults
 Jamil N, *PhD Dissertation*
- Theses Supervised**
- Supervised theses of the following students (degrees awarded) for their work on modeling of heart, brain, child growth and validation of 3-D-bioimaging techniques — moiré fringe topography and rasterstereography
- 2014**
- A Method to Generate Growth-and-Obesity Profiles of Children of Still-Growing Parents
 Jamil SS, *MPhil Thesis*, 2014 (unpublished)
- 2009**
- Adult-Height and Adult-Weight Formulae for the Pakistani Population
 Jamil N, *MPhil Thesis*, 2009 (unpublished)

- 2008**

 - Validity of Various Techniques of Moiré Fringe Topography
Techniques applied to detection of trunk deformities, mainly, scoliosis
Ansari SA, *MPhil Thesis*, 2008 (unpublished)
 - Validity of Various Techniques of Rasterstereography
Techniques applied to detection of trunk deformities, mainly, scoliosis
Khan MA, *MPhil Thesis*, 2008 (unpublished)
- 2006**

 - Physics and Geometry of Heart-Sound Quadrilateral
Wasim M, *MPhil Thesis*, 2006 (unpublished)
- 1990**

 - Magnetobiology for Covariant and Generalized-Coupling Models (of Brain)
Naeem M, *MSc Thesis*, 1990 (unpublished)
 - Effects of Gravitational Field on the Electro cortical Activity of Brain
Ahmed SN, *MSc Thesis*, 1990 (unpublished)
- Thesis (in progress)**

 - Accuracy, Precision and Reproducibility in Measurement of Masses (Weights) to Least Count of 0.01 kg
Razzaq UA, *MPhil Thesis*
- Synopsis (under preparation)**

 - Mathematical Justification of Cutoff Height for Induction in Armed Forces
Nuaman M, *MPhil leading to PhD*
- Seminars Given**

 - Selected list, related to Anthromathematics and Sport Mathematics:

 - Sports and Anthromathematics
http://www.ngds-ku.org/Presentations/Sport_Mathematics.pdf
http://www.ngds-ku.org/Presentations/Sport_Mathematics/Additional_File.pdf
 Seminar, 55th Annual Prize Distribution Function, Government College, Hyderabad, Pakistan
 - Anthromathematics: Mathematics of the Third Millennium
<http://www.ngds-ku.org/Presentations/AMTM.pdf>
 Seminar, Department of Mathematics, Federal Urdu University of Arts, Sciences and Technologies, Gulshan-é-Iqbal Campus, Karachi, Pakistan
 - Anthromathematics in the Service of Community Medicine
<http://www.ngds-ku.org/Presentations/KMDC.pdf>
 Seminar, Department of Community Health Sciences, Karachi Medical and Dental College (KMDC), Karachi, Pakistan
 - Child-Health Monitoring through Tools of Anthromathematics
<http://www.ngds-ku.org/Presentations/AFK.jpg>
 Seminar, Alliance Française de Karachi, Karachi, Pakistan
 - From Anthropometry to Anthromathematics
<http://www.ngds-ku.org/Presentations/Ziauddin.pdf>
 Faculty of Medicine Research Seminar, the Ziauddin University, Clifton Campus, Karachi, Pakistan
 - Role of Mathematics in the Clinical Sciences
<http://www.ngds-ku.org/Presentations/ICCBS.htm>
<http://www.ngds-ku.org/Presentations/ICCBS.pdf>
 Seminar, the International Center for Chemical and Biological Sciences (ICCBS), University of Karachi, Karachi, Pakistan
 - The NGDS Pilot Project: A Bioinformatics Perspective
 Research Seminar, Bahria University, Karachi, Pakistan
 - The NGDS Pilot Project: Growth and Development of Pakistani Children
 Seminar, Department of Special Education, University of Karachi, Karachi, Pakistan
 - The ICP Model of Child Growth (Concluding Remarks)
 Seminar, Department of Mathematics, University of Karachi, Karachi, Pakistan

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- February 20, 2006
Handout
 - The NGDS Pilot Project: Is Your Child Growing All Right?
http://www.ngds-ku.org/ngds_folder/Handout.pdf
Presentation, Beacon Light Academy, Karachi
- October 26, 2005
 - The NGDS Pilot Project: Generating Growth Profiles of Children and Monitoring Spinal Curvatures
Seminar, Department of Pediatrics, Dow University of Health Sciences, Karachi, Pakistan
- August 27, 2005
 - The NGDS Pilot Project: Methods to Generate Detailed Growth Profile and Monitor Spinal Curvatures in Children
Seminar, Departments of Pediatrics and Orthopedic Surgery, Frontier Medical College, Abbottabad, KP, Pakistan
- July 30, 2005
 - Mathematical Modeling of Growth of Children (Concluding Remarks)
Research Seminar, Department of Mathematics, University of Karachi, Karachi, Pakistan
- March 22, 2004
 - The NGDS Pilot Project: Controlling Growth of a Child
Seminar, Postgraduate Teaching Program, Department of Pediatrics, the Nishtar Medical College, Multan, Pakistan
- February 7, 2004
 - Covariant-Generalized-Coupling Model of Global Electrocortical Activity
Research Seminar, Department of Mathematics, University of Karachi, Karachi, Pakistan
- May 6, 2003
 - The NGDS Pilot Project: Modeling Growth of the Future PAF Officers
Seminar, Air War College, PAF Base 'Faisal', Karachi, Pakistan
- March 8, 2003
 - The NGDS Pilot Project: Anthropometry and Growth Modeling of the Pakistani Children
Research Seminar, Faculty of Pharmacy, University of Karachi, Karachi, Pakistan
- March 5, 2003
 - The Generalized-Coupling Model of Global Electrocortical Activity
Research Seminar, Division of Biological and Biomedical Sciences, the Aga Khan University Medical College, Karachi, Pakistan
- January 22, 2003
 - The NGDS Pilot Project: Anthropometry and Growth Modeling of the Pakistani Children
Research Seminar, Division of Biological and Biomedical Sciences, the Aga Khan University Medical College, Karachi, Pakistan
- October 16, 2002
 - The NGDS Pilot Project: Documenting and Modeling Growth of the Future Army Officers
Presentation, Army Public School, 'O' Levels, Karachi, Pakistan
- April 24, 2002
 - The NGDS Pilot Project: Documenting and Modeling Growth of the Pakistani Children
Seminar, Postgraduate Teaching Program, Department of Pediatrics, the Aga Khan University Medical College, Karachi, Pakistan
- January 26, 2002
 - The NGDS Pilot Project: Modeling Growth of the Pakistani Children
Presentation, PAF (Fazaia) Degree College, Base 'Faisal', Karachi, Pakistan
- December 7, 2001
 - The NGDS Pilot Project: Anthropometry of the Pakistani Children
Presentation, Aureole High School, Karachi, Pakistan
- March 7, 1998
 - 3-D Optical Imaging and Image Processing: Biomedical Applications
MIBM Seminar, Department of Mathematics, University of Karachi, Karachi, Pakistan (coverage in April 1998 issue of the MEDICINE International)
- August 3, 1995
 - A Mathematical Model of the Brain
MIBM Seminar, Department of Mathematics, University of Karachi, Karachi, Pakistan
- July 3, 1993
 - 3-D Optical Imaging: Medical Applications
Guest Lecture, the Baqai Medical College, Karachi, Pakistan
- July 11, 1991
 - 3-D Optical Imaging: Medical Applications
Guest Lecture, the Aga Khan University Medical College, Karachi, Pakistan
- July 16, 1990
 - 3-D Optical Imaging: Medical Applications
Summer Luncheon Seminar, Harvard-MIT Center for Biomedical Engineering, Massachusetts Institute of Technology, Cambridge, Massachusetts, USA

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- October 1988 • Medical Applications of Moiré Fringe Topography
Participant Talk, College on Medical Physics, ICTP (the Abdus-Salam International Center for Theoretical Physics), Trieste, Italy
- April 25, 1987 • Moiré Topography in the Management of Spinal Deformities
Guest Lecture, the Aga Khan University Medical College, Karachi, Pakistan
- November 17, 1986 • Moiré Topography
Presentation, Meeting of the Albert Einstein Society, Karachi, Pakistan

Conferences Chaired

- Selected list, related to Anthromathematics and Sport Mathematics:
- September 4, 2014 • The Second Conference on Anthromathematics and Sport Mathematics in the Memory of (Late) Hussain Ahmed Bilgirami
Flyer <http://www.ngds-ku.org/Anthromathematics/2014/Anthromathematics2014.pdf>
Department of Mathematics, University of Karachi, Karachi, Pakistan and Government College, Hyderabad, Pakistan, Conference Chair
- September 4 and, 5, 2013 • The First Conference on Anthromathematics in the Memory of (Late) Syed Firdous
Flyer <http://www.ngds-ku.org/Anthromathematics/2013/Anthromathematics2013.pdf>
Department of Mathematics, University of Karachi, Karachi, Pakistan and Government College, Hyderabad, Pakistan, Conference Chair

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Web address of this document: <http://www.ngds-ku.org/Anthromathematics/Anthromathematics.pdf>