

**Prof. Dr. Zainuddin Kamaluddin Kazi and Prof. Dr. Muhammed Ali Shah Memorial Lecture** delivered during the *First Conference on Athromathematics in the Memory of (Late) Syed Firdous (ANTHRO-MATHEMATICS 2013)*, Department of Mathematics, University of Karachi, Karachi, Pakistan and Government College, Hyderabad, Pakistan, September 4, 5, 2013 (Wednesday, Sept. 4, 2013; 1120h-1150h, Faculty Club, Dept. of Mathematics), Inaugural Session Anthro13-I, abstract#Anthro13-01, p 7

Syed Arif Kamal<sup>¶</sup>, Maqsood Sarwar and Urooj A. Razzaq  
SF-Growth-and-Imaging Laboratory,  
Anthromathematics Group, Dept. of Mathematics,  
University of Karachi, Karachi, Pakistan  
<sup>¶</sup>sakamal@uok.edu.pk

## Anthromathematics of the Human Spinal Column

Scoliosis, lateral curvatures and rotations of the human spinal column, is a potentially disfiguring disease, which starts sometimes around the age of 8 years. Adam's (forward-bending) test, having a high-false-positive rate, may expose children to unnecessary-X rays, which damage bone marrow of children. There is a need for effective (any child, who has straight spine is not needlessly treated) methods to be able to decide whom to send for X rays. We propose a mathematical model to make such decision for presence of scoliosis on the basis of a multi-level-screening system (<http://www.ngds-ku.org/pub/confabst0.htm#C43>), with a focus on investigating capability of different tests conducted after the first level, to determine genuine cases for follow-up. To validate this model, checks are being conducted in students of a local school, which include visual and forward bending, guarded-graduated-passive correction (<http://www.ngds-ku.org/pub/confabst1.htm#C16>), level of spinal dimples, plumb-line alignment, and moiré fringe topography (MFT), ruling out other causes, e. g., leg-length inequality, hip weakness and poor posture. This lecture is dedicated to the memories of distinguished orthopedic surgeons, **Prof. Dr. Z. K. Kazi** (Zainulabidin Kamaluddin Kazi) and **Prof. Dr. M. A. Shah** (Syed Muhammed Ali Shah, the cricket lover), who left us on January 8 and February 4 of this year, respectively. Dr. Kazi, born in Kapadwanj, Gujrat, India on December 17, 1920, to an enlightened family of scholars and statesmen, was nephew of **Maulana Muhammed Ali Johar**, the shining star of *Tahreek-é-Khilafat*. The deceased graduated from Bombay's Grant Medical College in 1945, qualified as a Fellow of the Royal College of Surgeons in 1948 and joined Jinnah Postgraduate Medical Center (JPMC), called Jinnah Central Hospital at that time, as the first resident surgeon in 1949 and becoming its director in 1972. He was instrumental in the establishment of Sindh Medical College and the College of Physicians and Surgeons of Pakistan. Dr. Kazi's work was acknowledged by Sir Ludwig Guttman (Founder, National Spinal Injury Center in Elsbury, Buckinghamshire) in his book on spinal injuries. SAK's first interaction with him dates back to 1979, when the former had an opportunity to teach the latter's son, Salahuddin Kazi and daughter, Mona Kazi at Karachi Grammar School. The late orthopedic surgeon guided SAK to develop the first moiré frame to monitor scoliosis patients. The other personality, who left us this year, was Dr. Shah, born on October 26, 1946 in Bareilly, UP, India. He completed his MBBS from Dow Medical College. Later, he did FRCS from Glasgow and Edinburgh. He was the second Pakistani, to be decorated with three highest civil awards of our country; Pride of Performance (Surgery), Tamgha-é-Imtiaz (Sports) and Sitara-é-Imtiaz (Public Service). Dr. Shah was among a very few highly skilled re-plantation surgeons, throughout the globe. It was his undying passion for cricket that he, despite of his speedily deteriorating health, worked tirelessly for the sport culture of Pakistan. SAK met him during the *First National Conference on Headache and Back Pain* in 2008 and gave him a CD of work on moiré fringe topography (MFT) and rasterstereography in the management of back pain. His services for health and sport community of our country are unforgettable (Dr. Kazi's daughter, Durriya Kazi was kind enough to provide information about him).



From left to right, Prof. Dr. Zainuddin Kamaluddin Kazi, Prof. Dr. Muhammed Ali Shah,  
moiré fringe topography, plumb-line alignment & forward-bending test

**Keywords:** Scoliosis, moiré fringe topography, multi-level-screening system, school-age child

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

**HTML version:** <http://www.ngds-ku.org/pub/confabstA.htm#C98>:

<sup>¶</sup>Prof. Dr. Syed Arif Kamal (<http://ngds-ku.org/kamal>), PhD (Mathematical Neuroscience), MA, Johns Hopkins, Baltimore, MD, United States, MS, Indiana, Bloomington, IN, United States, Associated Professor in Orthopedic Surgery, Malmö General Hospital, Sweden (1988), Research Associate in Orthopedic Surgery, James Whitecomb Riley Hospital for Children, Indianapolis, IN, United States (1980) and Member, Subject Committee for Physical Education, Health and Sport Sciences, National Testing Service (<http://nts.org.pk>), Islamabad, Pakistan; *Paper Mail:* Professor and Chairman, Department of Mathematics (<http://math.uok.edu.pk>), and Project Director, the NGDS Pilot Project (<http://ngds.uok.edu.pk>), University of Karachi (<http://www.uok.edu.pk>), Karachi 75270, Pakistan; *Telephones:* +92 21 9926 1300-6 ext. 2380, 2293