Dear Colleague:

Our colleague A. Kadir Aziz is sponsoring a lecture series on *Differential Equations and Their Numerical Analysis* in the Department of Mathematics of the University of Maryland, College Park.

The first 32 lectures in the series were given by

- Ivo Babuška
- Franco Brezzi
- Alfio Quarteroni
- Willi Jäger
- Emmanuel J. Candès
- Leslie Greengard
- Peter Constantin
- Robert Pego
- Lars B. Wahlbin
- Roger Temam
- Thomas Y. Hou
- Felix Otto
- Albert Cohen
- Thomas Hughes
- Jinchao Xu
- Annalisa Buffa
- Douglas N. Arnold
- Benoît Perthame
- John Brenier
- Richard D. James
- Ronald DeVore
- Michael Hintermüller
- Lenya Ryzhik
- Vidar Thomée
- John Ball
- Michael Vogelius
- George C. Papanicolaou
- Grégoire Allaire
- Chi-Wang Shu
- Vivette Girault
- Endre Süli

Enclosed is a flyer announcing the next lecture by Prof. Wolfgang Dahmen (Aachen University, Germany) on November 18, 2015.

We hope you can attend, and would be appreciative if you would post the flyer.

Sincerely yours,

[Signatures]

Stuart Antman

Ricardo H. Nochetto
AZIZ LECTURES
Differentical Equations and Their Numerical Analysis

Department of Mathematics

UNIVERSITY OF MARYLAND
November 18, 2015  
3:15 pm  
Colloquium Room (MTH 3206)

Prof. Wolfgang Dahmen  
Institute für Geometrie und Praktische Mathematik  
RWTH Aachen University (Germany)

Tensor Sparsity - a Regularity Notion for High Dimensional PDEs

The numerical solution of PDEs in a spatially high-dimensional regime (such as the electronic Schrödinger or Fokker-Planck equations) is severely hampered by the “curse of dimensionality”: the computational cost required for achieving a desired target accuracy increases exponentially with respect to the spatial dimension.

We explore a possible remedy by exploiting a typically hidden sparsity of the solution to such problems with respect to a problem dependent basis or dictionary. Here sparsity means that relatively few terms from such a dictionary suffice to realize a given target accuracy. Specifically, sparsity with respect to dictionaries comprised of separable functions – rank-one tensors – would significantly mitigate the curse of dimensionality. The main result establishes such tensor-sparsity for elliptic problems over product domains when the data are tensor-sparse, which can be viewed as a structural regularity theorem.
The Aziz Lectures are sponsored by Prof. A. Kadir Aziz. The purpose of the lectures is to bring distinguished mathematicians to the University of Maryland, College Park, to give survey lectures on differential equations, their numerical analysis, and related areas.

Kadir Aziz received his Ph.D. from the University of Maryland, College Park in 1957. He was on the faculty of Georgetown University from 1956 to 1967, and has been on the faculty at the University of Maryland, Baltimore County (UMBC) since 1967. He is presently Professor Emeritus of Mathematics and Statistics at UMBC. Throughout his career Kadir Aziz has been an active member of the Numerical Analysis group at College Park.

**Directions by Metro:** Take the Green Line to the College Park station. On the east side of the station take a University bus to campus.

**Directions by car:** From I-95/495 take exit 25 to US-1 South and College Park. Go south for about 1.5 miles. At the main campus entrance make a right turn onto Campus Drive. At the traffic circle with the big "M" make a right turn onto Regents Drive. Then Regents Drive Garage will be on your left (parking is $3 per hour).

For more information see [www.math.umd.edu/aziz](http://www.math.umd.edu/aziz)