

5th Conference on Mathematical Science and Applications CMSA

November 17-18, 2021 (Virtual)

جامعة الملك عبد الله
للعلوم والتقنية
King Abdullah University of
Science and Technology



CONFERENCE PROGRAM

Wednesday 17 November 2021

Opening Ceremony

8:30AM - 9:00AM

Dr. Najah Ashry, Senior Associate to the President & VP Strategic National Advancement, KAUST
Prof. Zeid Al Othman, Dean, College of Science, KSU
Prof. Bander Al-Mohsen, President of SAMS

Plenary Session 1

9:00AM - 9:40AM

Prof. Omar Knio, KAUST, Saudi Arabia
Efficient solvers for space-fractional diffusion equations

9:45AM - 10:25AM

Prof. Hong-Kun Xu, Hangzhou Dianzi University, China
Nonconvex Regularization Techniques for Sparse Signal Recovery

10:30AM - 10:40AM

Tea/Coffee Break

10:45AM - 11:25AM

Prof. Vicentiu Radulescu, University of Craiova, Romania
Double-phase problems with variable growth

11:30AM - 12:10PM

Prof. Nizar Touzi, Ecole Polytechnique, France
Entropic mean field optimal planning

12:15PM - 12:55PM

Prof. Nader Masmoudi, NYU Abu Dhabi, UAE
singularities in the Prandtl system

1:00PM - 2:00PM

Lunch

Chair:
Prof. Fawzi Al-Thukair

Plenary Session 2

2:00PM - 2:40PM

Prof. Gabriel Wittum, KAUST, Saudi Arabia
Double enriched finite volume spaces for the DNS of fluid-particle interaction

2:40PM - 3:20PM

Prof. Salim A. Messaoudi, Sharjah Univ. UAE
On the decay of solutions of a damped viscoelastic wave equation with variable-exponent nonlinearities

3:20PM - 4:00PM

Prof. Said Mesloub, KSU, Saudi Arabia
On a non-local initial boundary value problem for a nonhomogeneous memory type Timoshenko system

4:00PM - 4:10PM

Tea/Coffee Break

4:10PM - 4:50PM

Prof. Nasser-eddine Tatar, KFUPM, Saudi Arabia
Fractional differential equations with memory

4:50PM - 5:30PM

Prof. Khaled M. Furati, KFUPM, Saudi Arabia
Fractional model for the spread of COVID19- subject to mitigation measures and public perception

Chair:
Prof. Souhail Chebbi



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Opening Remarks

8:30AM - 8:40AM **Dr. Tony Chan**, KAUST President

Plenary Session 3

8:40AM - 9:10AM	Dr. David Bolin , KAUST, Saudi Arabia Spatial modeling of significant wave height using deformed SPDE models
9:10AM - 9:50AM	Prof. Mhamed Eddahbi , KSU, Saudi Arabia Stochastic partial differential approach for describing crystallization droplets in water emulsion
9:50AM - 10:30AM	Prof. Haavard Rue , KAUST, Saudi Arabia The role and importance of sparse matrices in statistics
10:30AM - 10:40AM	Tea/Coffee Break
10:40AM - 11:20AM	Prof. Messaoud Bounkhel , KSU, Saudi Arabia Applications of non-smooth differential inclusions to real life problems
11:20AM - 12:00PM	Prof. Abir Alharbi , KSU, Saudi Arabia Artificial intelligence for prediction of Covid19- new cases in Saudi Arabia using extreme learning machine
12:00PM - 12:40PM	Prof. Mohammad Ferdows , University of Dhaka, Bangladesh Dual and similarity solution for flow and heat transfer of nanofluid past a stretching sheet with magnetic induction: Efficiency of carbon nanotubes
12:40PM - 2:00PM	Lunch

Chair:
Prof. Diogo Gomes

Parallel Sessions

Sessions A

Chair: **Prof. Daniele Boffi**

Sessions B

Chair: **Prof. Nasser-eddine Tatar**

2:00PM - 2:25PM	Prof. Abdullah Ahmad Abdullah , Umm Al-Qura University, Saudi Arabia Marangoni convection in a fluid layer containing gyrotactic microorganisms	Prof. Saoussan Kallel-Jallouli , University Tunis El Manar, Tunisia A new geometrical model to solve the puzzle of time and understand the mystery of Dark matter and the magic of Quantum mechanics
2:25PM - 2:50PM	Dr. Safya Alshehaiween , KFUPM, Saudi Arabia Unconditionally stable linearly implicit schemes for gradient systems with quartic potentials	Dr. Usamah Al-Ali , Saudi Electronic University, Saudi Arabia The relativistic heat equation on flat Friedmanspace time
2:50PM - 3:15PM	Dr. Mogtaba A. Y. Mohammed , Majmaah University, Saudi Arabia Effective macroscopic stochastic models for chemical reactive flows in porous media	Dr. Weaam Alhejaili , Princess Nourah bint Abdulrahman University, Saudi Arabia Numerical studies of the Steklov eigenvalue problem via conformal mappings
3:15PM - 3:25PM	Tea/Coffee Break	

Short communications by Ph.D. students

Chair: **Dr. Najla Altwaijry**

3:25PM - 3:40PM	Imtithal Alzughaibi , KSU, Saudi Arabia Fourier transform vs Wavelet transform: Lipschitz regularity of functions
3:40PM - 4:05PM	Hasnaa H. Alzahrani , KAUST, Saudi Arabia Bayesian calibration of order and diffusivity in a space-fractional diffusion equation
4:05PM - 4:20PM	Sami Alabiad , KSU, Saudi Arabia A unique representation of cyclic codes over $GR(p^n; r)$
4:20PM - 4:35PM	Amirah Alharthi , University of Leeds, UK Forests of stumps
4:35PM - 4:50PM	Mohammed Alsayyari , KAUST, Saudi Arabia The capabilities of summation-by-parts operators for non-linear stability of semi-discrete schemes
4:50PM - 5:00PM	Closing Ceremony

