

Topic: ISSMGE HNC

Time: Oct 1, 2021 11:00 AM Budapest

Join Zoom Meeting

<https://us02web.zoom.us/j/89842075189?pwd=NmwrQmNBL2tFdXZPMFJlYlA1UFpvUT09>

Meeting ID: 898 4207 5189

Passcode: 182555

Lectures : 8 min to 25 min

INVERSE PROBLEMS workshop - **Professor Tom Schanz** memory workshop

“Parameter identification, model validation, real-time systems”

Date: 10h30 to 13h October 1 2021

Location: Hungarian Academy of Sciences

The evaluation of tests usually needs the identification of parameters. The model validation, model calibration or model building entails the fit of ‘measured’ and computed data. These problems are commonly referred as the solution of an inverse problem. In the linear case automatic solutions are available. The non-linear inverse problems is either solved with local minimisation combined with a trial and error procedure. The parameter error, the goodness of fit (and uniqueness of the solution in the non-linear case). Alternatively, learning algorithms are used.

This workshop aims to promote research dissemination of earlier and current research related to the non-linear inverse problem solution including methods like neural network and AI.

TOPICS

In relation to non-linear inverse problem solution:

- model fitting methods related to various physical, biological, technical problems
- reliability testing methods (parameter error estimation, uniqueness, goodness of fit)
- real-time test evaluation
- modeling an immun reactions

Program

Opening on behalf of the Hungarian Academy of Sciences:

Prof. János Józsa

(a few words on Professor Schanz)

Maria Datcheva chair

Prof. Kornél Kovács co-chair

1 Peter Berzi: Secant method in multidimension
info@dynatest.hu

2 Sai Sri Harsha Vallurupalli, M.Sc. RUBochum: Optimizing the design of retaining wall systems using multiobjective optimization strategies.
datchevam@yahoo.com

3 Chenyang Zhao : "A hybrid model for mechanized tunnel excavation",
datchevam@yahoo.com

4 Elham Mahmoudi : "Reliability-based Robust Design Optimization of a Rock Salt Cavern"
datchevam@yahoo.com

5 Tamas Pfeil: An immuno-chemical model some thoughts before parameter identification
I am writing tamas.pfeil@ttk.elte.hu

6 Péter Bakucz: Traffic and automated car development

7. Erick Baziw and Gerald Verbeek: Inverse Theory – Concepts and Examples

8. Arash Lavasan "Optimized model validation based on monitoring data in mechanized tunneling: application to Milan Metro line 5"

Epilogue Arash Lavasan

GRAVITATION workshop

“Gravitation (tide) effects in the measurements of tectonics and groundwater data”

14h to 16h, October 1, 2021

Location: Hungarian Academy of Sciences, Budapest.

TOPICS :

- Space Mechanics – Controlled by The Symmetries in Physics
- Effect of Gravity : Tide in Tectonics and GWL
- Eotvos torsion balance measurements

This workshop aims to promote research dissemination of earlier and current research related to how gravitation effects the measurement of tectonic table motions, earthquakes, air pressure and GWL.

Program

Opening on behalf of the Hungarian Academy of Sciences:

Prof. János Józsa

(a few words on Lóránd Eötvös)

Péter Ván chair

Gábor Papp co-chair

1Bruno Meurers, Gábor Papp, Hannu Ruotsalainen, Judit Benedek
and Roman Leonhardt : Environmental effects in tilt and gravity residuals observed at Conrad
Observatory (Austria)

2Völgyesi, Lajos: Development of the Eötvös balances: automatization and
readout

3Szondy, György: Eötvös balance, the everythingmeter: environmental
effects

4Ván, Péter: The weak equivalence principle and the 5th force: the new
Eötvös experiment

5Mező, György: Data collection and data processing: the example of Eötvös
balance networks

6Gyula, Tóth: Outlier tolerant automated inversion of noisy data captured on the Eötvös torsion balance

GRADING CURVE workshop : Professor Gyan Pande memory workshop

“Particle shape, particle size distribution and their link to geotechnical behaviour”

Date: 16h to 20h October 1st 2021

Location: Hungarian Academy of Sciences

TOPICS

- internal stability, internal structure, particle migration, filtering, segregation
- soil properties and behaviour in relation to grain and pore size distribution, particle shape
- particle breakage, degradation, the entropy principle, applications

Significant advance has been made to recognise the effect of particle distribution and the shape characteristics on the mechanical behaviour of geomaterials. The grading entropy coordinates enable to represent (entire) particle size distributions by two statistical variables; a mean log diameter and a generalised uniformity coefficient.

Representing each grading curve by these two grading entropy coordinates in a 2-dimensional space, suffusion and internal stability, filtering and segregation criteria were postulated.

Particle breakage / degradation affects shearing behaviour and critical states because of evolving particle size distributions as well as particle shape.

The entropy principle through the grading entropy may control breakage and critical states. Similarly, it has been shown that entropy parameters can be used to represent the grading curve changes under mechanisms involving mass loss, such as biodegradation and dissolution.

Finally, it has been well documented that the physical properties (e.g. permeability of granular materials) depend on the particle size distribution and can be approximated through the grading entropy parameters. However, particle shape may modify these relations.

Opening on behalf of the Hungarian Academy of Sciences:

Prof. János Józsa

(a few words on Professor Pande)

Prof. John McDougall chair

Dr. Daniel Barreto co-chair

Part 1

1 John McDougall: The grading curves on the entropy diagram – a representation of salt dissolution and grading entropy diagram

J.McDougall@napier.ac.uk

2 Hans-Georg Mattutis: Shape effects, friction

hg@mce.uec.ac.jp

3 Wiebke Baille: sand/silt mixtures (Rahemi/Baille/Wichtmann) wiebke.baille@ruhr-uni-bochum.de

4 Daniel Barreto and ...: Fine content -

D.Barreto@napier.ac.uk

5 Imre et al : Fractals and grading curves

Part 2

Date: 18h to 20h. Oct. 1. CET

1 Min Wang: Role of Gradation Curve in Description of Mechanical Behavior of Unsaturated Soils –

2 Shuyin Feng: k and grading curve

4 Janos Török: Edwards Statistical Physics in granular matter modelling torok72@gmail.com

5 Daniel Barreto: Critical state and DEM

6 Casini – Guida : Fracture tests and Weibull distribution for the grading curves

7 E Imre et al : Open mine rehabilitation work and soil maturity