

17th URA International Seminar Okayama University

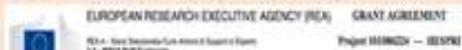
Date: Wednesday 12th July 2023 — 16:30 PM (Japan Time)

VENUE: Tsushima Campus – international House – Conference Hall

William SACKS

(Talk supported by the HESPRI project - Broadcasted on ZOOM)

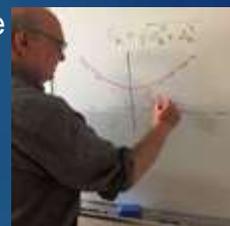
HESPRI (HORIZON EUROPE)
<https://www.hespriproject.eu/work-plan>



ELEVATING HIGHER EDUCATION
PUBLIC POLICIES:
AN EMPOWERING SPRINGBOARD

Solving problems... by using Mathematica™, a versatile software environment --- Applications in formal, natural and social sciences ---

Created 35 years ago by Stephen Wolfram, Mathematica™ is one of the very first programming languages able to perform symbolic and analytical mathematics in a non-numerical way: In a nutshell to do algebra! The user could, for the first time, perform complex equation manipulation, solve integrals and differential equations, and more, which are virtually impossible by hand.



This seminar will trace how, since these early days, Mathematica has evolved and flourished into a remarkable software environment for highly sophisticated problem analysis which can be applied to all realms of the sciences. I will give examples of how the language, using symbolic programming and function definitions, adds a new level of flexibility to the programming. Results will be illustrated using Mathematica's rich variety of 2D and 3D graphics displays.

Coupled to a very large database, called Wolfram Alpha™, an even wider range of applications are possible: economics, geography, bioinformatics, medicine, finance, etc. At the time of writing, it is likely that Mathematica™ will soon be coupled to AI, such as ChatGPT, opening the door to information-computation in an unprecedented way. I hope that this seminar will serve as a nice appetizer to how we might be solving problems in the near future!

NB: Talk for scientists, teachers and graduate students

The participation is free of charge
Advanced registration – dead-line: July-7th@:
bernard-chenevier@cc.okayama-u.ac.jp
ZOOM link will then be sent to participants registered outside Okayama

Co-organized by



<http://ura.okayama-u.ac.jp/>



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<https://www.gnst.okayama-u.ac.jp/>

SPEAKER: Pr. William SACKS



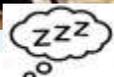
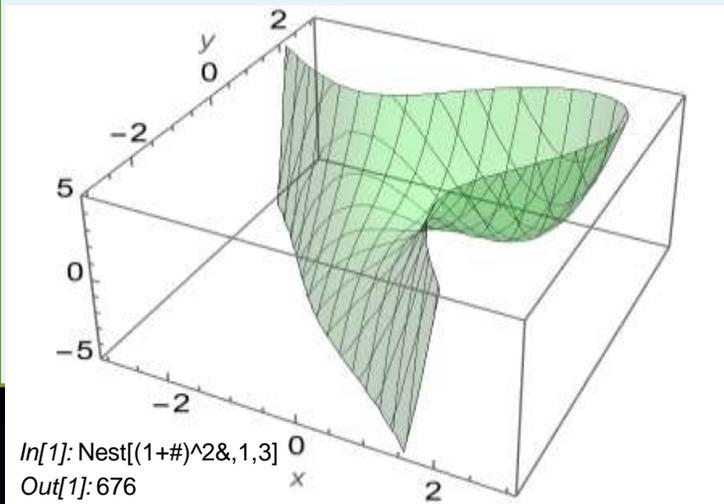
Of US citizenship Pr. Sacks grew up in Geneva, Switzerland attending the International School Ecolint. He graduated from Tufts University (BS degree) and Georgetown University (MS and PhD). He has been a professor of physics at Sorbonne University for more than 3 decades. His field is condensed matter physics, both experimental and theoretical.



From Bachelors to upper-level Masters, he teaches, general physics (mechanics, thermodynamics, relativity), mathematics for the sciences and advanced graduate courses (surfaces, quantum states, superconductivity and magnetism).

For more than 25 years, his research has centered on the exotic electronic structures of novel materials with a focus on low-dimensional materials (charge density wave state) and superconductivity (high T_c cuprates, multiband superconductors). He actively participated with D. Roditchev and T. Cren (INSP, Paris) in the development of low temperature Scanning Tunneling Spectroscopy, and the realization of the first Josephson Microscopy. More recently with A. Mauger and Y. Noat, he has been working on the theory of high T_c superconductivity. This work was further developed during his JSPS fellowship to Japan in 2020 invited to AIST Tsukuba and Okayama University.

Prof. Sacks is a co-leader of **NETSU**, a HORIZON EUROPE staff-exchange consortium of more than 25 scientists (6 Japanese Institutions) devoted to future global sustainability and focused on the use of superconductors for both future efficient clean-energy and medical applications. In June 2023 it is under evaluation by the European Commission. A second project, the exciting **HESPRI**, was kicked-off in January 2023. It is focused on the elaboration of innovative Higher Education Policies to improve performances of Universities. Prof. Sacks has a principal role in the area of interdisciplinarity. He has also been actively assisting with Japan-France student exchanges, teaching, giving seminars, and co-organizing workshops. He is specifically interested in promoting to students innovative educational approaches where **cultural diversity is a major concern**. In the last 4 years, Prof. Sacks' activities in Japan have been marked by successive invited professor positions to Okayama University, Kobe University Graduate School of Engineering (Pr. Mizuhata) and Tokyo University of Science (Prof. Miyakawa).



[Inquiry]
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