

# **SEMINARIUM Z MAGNETYZMU I NADPRZEWODNICTWA**

Uprzejmie zawiadamiamy, że **WYJĄTKOWO w piątek**

**15 grudnia 2023 r., o godz.10:00**

odbędzie się seminarium w sali 203, budynek I

na którym

**Prof. dr hab. Maciej Maśka**

*(Politechnika Wroclawska; Wydział Podstawowych Problemów Techniki; Instytut Fizyki Teoretycznej)*

wyłosi referat na temat:

## **“Metody Monte Carlo w fizyce”**

There are some problems in physics and, in general, in science that are so complicated that they just cannot be analyzed using formulas that you can write down on a piece of paper. Then, the solution may be a statistical technique initially developed by Stanisław Ulam, who worked on the Manhattan Project. A family of these techniques, known as Monte Carlo methods in reference to Ulam's uncle who loved playing the odds at the Monte Carlo casino, is used to model probabilistic (or "stochastic") systems and establish the odds for a variety of outcomes.

The lecture will be a pedagogical introduction to these techniques. It will begin with historical examples followed by a discussion of the elements of statistics that are used in Monte Carlo simulations, such as importance sampling. Next, the Metropolis or Metropolis-Hastings algorithm, recognized as one of the ten most pivotal algorithms in history, will be discussed. The main part of the lecture will be devoted to the application of this algorithm to simulations of classical systems. In the concluding part the problems that arise when applying Monte Carlo techniques to quantum systems and how to (try to) solve them will be discussed.

**Wykład będzie prowadzony w języku polskim w sali 203, slajdy będą w języku angielskim.**

**Dostępna będzie również transmisja ZOOM - link podany jest na stronie IF PAN.**

**Serdecznie zapraszamy**

**Roman Puźniak  
Andrzej Szewczyk  
Henryk Szymczak**