



ICTP | International Centre for Theoretical Physics
SAIFR | South American Institute for Fundamental Research

Campus of IFT-UNESP – São Paulo, Brazil

October 28 – November 1, 2024

MINICOURSE ON BAYESIAN MACHINE LEARNING FOR SCIENTIFIC RESEARCH



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ICAS-UNSAM, Argentina

We will present five 3-hour lectures that will introduce participants to the world of Bayesian Machine Learning for scientific purposes. The minicourse is tailored to suit both senior and junior researchers, catering to their respective levels of experience and interest.

In the first block of each lecture, we aim to transmit the big picture of the lecture's topic with a focus on the details from a supervising point of view. The fine points and subtleties will be addressed here, but without strict demonstrations or supplied code. This block is intended for both seniors and juniors: for seniors as a summary that shows how to apply these tools to scientific research; and for juniors as an entrance to the second block in which we put our hands in the dough. We conclude the block with an extended coffee break where we expect that the proposed ideas trigger discussions around each participant's field of study and how to apply it in their data.

The second block is very hands-on and is intended for juniors, but seniors interested in getting actively involved in the calculations are welcome as well. We present, discuss and write code. Participants are engaged in coding exercises and discussing practical applications. This block emphasizes practical skills and real-world problem-solving. We use different libraries, and we deploy statistical software especially designed to tackle the presented problems

The minicourse is generally designed for any scientific career. We use mostly physics examples, but the material will be useful and insightful for any other field with hard scientific research. We will try to adapt and discuss the problems within the participants' fields of research.

Participants are expected to have taken courses in algebra and analysis, be familiar with multi-dimensional vectors and expressions, have some knowledge of probability and statistics, and be prepared for non-trivial abstract reasoning and thinking. Juniors, in addition, are expected to have some knowledge of Python.

There is no registration fee and limited funds are available for local expenses.

Application deadline:
September 18, 2024

Online application and more information:
ictp-saifr.org/mbmlsr2024



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