



University of Crete
Department of Physics



FORTH
INSTITUTE OF ASTROPHYSICS



Joint Physics & IA/FORTH Colloquium

Thursday, 12 May 2022 | 17:00 – 18:00, Online with ZOOM

Astrostatistics: From Wavelets to Deep Learning

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ABSTRACT

Since the dawn of time, humans have been wondering about their place in the Universe. Over the past century, advances in modern physics, technology and engineering, along with the unique possibilities offered by space missions, have opened new windows to explore the cosmos. All-sky surveys, with observations across the entire electromagnetic spectrum, are the best strategy to fully understand and model the Universe in detail. Major upcoming research facilities, such as the Rubin Telescope (Large Synoptic Survey Telescope), the Square Kilometer Array (SKA) and the Euclid space telescope, will provide key elements to addressing this challenge, by producing high quality data of petabyte volumes. These surveys prove to be a major “big data” challenge, which require the development of innovative statistical methods essential both for the data analysis and their physical interpretation.

I will review the evolution during the last thirty years of the astrostatistics field, highlighting how novel techniques opened new perspectives in analyzing our data, and how the recent emergence of machine learning tools could as well help us addressing new mathematical challenges to answer fundamental questions about the nature of our Universe.

ZOOM Link: <https://ia-forth-gr.zoom.us/j/88279440094?pwd=eWNHcXRnMDI0d0NwKy9icndUSjlwdz09>