Eustasio del Barrio is the Director of the Mathematical Institute of the University of Valladolid (IMUVa). His research focuses on Mathematical Statistics, Probability, and Data Science, with an emphasis on proposing new statistical methods and contributing to the mathematical foundations for their design and calibration. Application areas include resampling methods, goodness-of-fit techniques, model validation with contamination, and structured data aggregation, particularly relevant in the era of big data. On a fundamental level, his research involves empirical processes and the use of optimal transport. These ideas and techniques have proven effective in Data Science and AI, particularly in Fair Learning to detect and correct biases in algorithms and in multivariate ranks and quantiles. Recently, he has received the ‘Best Methodological Contribution in Statistics 2023’ SEIO/ BBVA Foundation award. He is also a member of the Editorial Board of TEST, the journal of the Spanish Statistical Society (SEIO), and a member of the Executive Board of that society.

Optimal transport is a classical problem in Mathematics, with a long history, tracing back to the work of G. Monge. In more recent times we have seen a huge advance in the understanding of the problem, both from the point of view of the analysis of the optimal solutions and from a computational point of view. This has motivated a sharp increase of the interest in optimal transportation tools for Data Science applications. This talk will discuss some of these recent theoretical advances, with the focus put on statistical applications. We will also explore some of these applications.

16TH MATH COLLOQUIUM BCAM-UPV/EHU

We are glad to announce that the 16th Math Colloquium BCAM-UPV/EHU will take place on Wednesday, April 17, at 11:45 (CET) at Sala de Conferencias (Aula 1), Department of Mathematics of the UPV/EHU campus in Leioa. Lunch will be offered at the end.

11:45-12:45 | Ruth Charney: Algebra meets Geometry: from braid groups to Artin groups

In geometric group theory one studies groups by realizing the group as symmetries of some geometric object. In this talk, we will discuss geometric approaches to braid groups and Artin groups. Braid groups are a fascinating class of groups with applications to topology, algebra, and combinatorics. Braid groups belong to a much larger, but less understood class known as Artin groups. We will begin by discussing various algebraic and geometric characterizations of these groups. We will then survey what is known and not known about Artin groups and highlight a few of the new geometric approaches that have been introduced to address some of the more challenging open questions.

13:00-14:00 | Eustasio del Barrio : Optimal Transport for Data Science: Theory and Applications

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About the speakers:

Ruth Charney (Brandeis University) received her Ph.D. from Princeton University in 1977 and held postdoctoral positions in Berkeley and Yale. She became a professor in Ohio State University and since 2003 she works at Brandeis University, where she holds the Theodore and Evelyn G. Berenson Chair in Mathematics. Ruth Charney was named a Fellow of the American Mathematical Society in the inaugural class of 2013 and was selected as a Fellow of the Association for Women in Mathematics in the inaugural class of 2017. She served as president of the Association for Women in Mathematics and served as president of the American Mathematical Society for the 2021–2023 term. She has made many lasting contributions to geometric group theory and the theory of Artin groups as well as to K-theory and algebraic topology.

Eustasio del Barrio is the Director of the Mathematical Institute of the University of Valladolid (IMUVa). His research focuses on Mathematical Statistics, Probability, and Data Science, with an emphasis on proposing new statistical methods and contributing to the mathematical foundations for their design and calibration. Application areas include resampling methods, goodness-of-fit techniques, model validation with contamination, and structured data aggregation, particularly relevant in the era of big data. On a fundamental level, his research involves empirical processes and the use of optimal transport. These ideas and techniques have proven effective in Data Science and AI, particularly in Fair Learning to detect and correct biases in algorithms and in multivariate ranks and quantiles. Recently, he has received the ‘Best Methodological Contribution in Statistics 2023’ SEIO/ BBVA Foundation award. He is also a member of the Editorial Board of TEST, the journal of the Spanish Statistical Society (SEIO), and a member of the Executive Board of that society.