

PROBABILITY THEORY SEMINAR

The Fisher-Rao Distance between Univariate Normal Distributions.**Saulo Henrique**

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Date: 10 February 2023

Time: 14:15 pm

This lecture will be held:
Sala B – MAT-UnB

Abstract. The Fisher-Rao distance is a measure of dissimilarity between two probability distributions that is defined from a Riemannian metric called Fisher's metric. Such metric is generated by Fisher's information matrix in the space of the parametric family of probability distributions for a given statistical experiment. These concepts are in the core of a relatively new research subfield of Mathematics, in the confluence of the subareas of Probability, Mathematical Statistics and Differential Geometry and has been called Information Geometry.

In this Probability Seminar, we will consider a statistical experiment whose parametric family is given by univariate Gaussian distributions. We will show the role that the hyperbolic Poincaré plane plays in determining a closed analytic formula for the Fisher-Rao distance between two distributions in such a statistical experiment.

This talk is introductory in which some basic concepts of the subject will be approached.

References

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- [2] Costa, S.I.R.; Santos, S.A.; Strapasson, J.E.: *Fisher information distance: A geometrical reading*. Discret. Appl. Math., 197, 59–69 (2015).
- [3] Atkinson, C.; Mitchell, A.F.S.: *Rao's Distance Measure*. Sankhyā Indian J. Stat., 43, 345–365 (1981).
- [4] Santiago, Wellington.: *Geometria da Informação - O Teorema de Cramer-Rao*. Dissertação (Mestrado em Matemática)- UFRJ, Rio de Janeiro, 2017.
- [5] Porto, Julianna Pinele Santos.: *Geometria da Informação: Métrica de Fisher*. Dissertação (Mestrado em Matemática)- Universidade Estadual de Campinas, Campinas, 2013.