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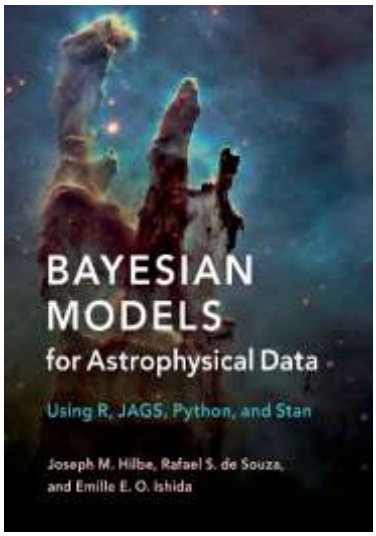
Astrostatistics and the pathway to interdisciplinarity

Prof. Rafael S. de Souza（COIN）

Prof. Rafael S. de Souza is the chair of the Cosmostatistics Initiative (COIN). COIN is a worldwide endeavor aimed to create an interdisciplinary community around data-driven problems in Astronomy. His research is about analyzing, interpreting, and making sense of astronomical and cosmological observations. Applications include, but are not limited to, studies of the properties and nature of the local and early Universe. His first book, "Bayesian Models for Astrophysical Data Using R, JAGS, Python, and Stan" won the Prose Awards in 2018 in the category of Cosmology and Astronomy. He is also Vice-President of the International Astrostatistics Association and Chief Editor of the Element Series in Astrostatistics by Cambridge University Press.

Abstract



Modern astronomy has been rapidly increasing our ability to see deeper into the universe, acquiring enormous samples of cosmic populations. Gaining astrophysical insights from these datasets requires a wide range of sophisticated statistical and machine learning methods. The field of astrostatistics needs increased collaboration with statisticians in the design and analysis stages of research projects. During this talk, I will describe my experience building an interdisciplinary community -- the Cosmostatistics Initiative (COIN). I founded COIN in 2014, and since its conception, it has grown to more than 60 researchers from six continents. Finally, I will give some examples of how we employ customized statistical models to optimize scientific advances. More information about the COIN is available at: https://cosmostatistics-initiative.org/.