



Information Geometry and Population Genetics [The Mathematical Structure of the Wright-Fisher Model /

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Springer International Publishing,
2017

Mathematical statistics Human genetics Global analysis (Mathematics)
Geometry Distribution (Probability theory Mathematical and
Computational Biology Statistical Theory and Methods Human Genetics
Analysis Probability Theory and Stochastic Processes

Monografía

The present monograph develops a versatile and profound mathematical perspective of the Wright-Fisher model of population genetics. This well-known and intensively studied model carries a rich and beautiful mathematical structure, which is uncovered here in a systematic manner. In addition to approaches by means of analysis, combinatorics and PDE, a geometric perspective is brought in through Amari's and Chentsov's information geometry. This concept allows us to calculate many quantities of interest systematically; likewise, the employed global perspective elucidates the stratification of the model in an unprecedented manner. Furthermore, the links to statistical mechanics and large deviation theory are explored and developed into powerful tools. Altogether, the manuscript provides a solid and broad working basis for graduate students and researchers interested in this field

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Título: Information Geometry and Population Genetics [Recurso electrónico] :] The Mathematical Structure of the Wright-Fisher Model by Julian Hofrichter, Jürgen Jost, Tat Dat Tran

Editorial: Cham Springer International Publishing 2017

Descripción física: XII, 320 p. 3 il., 2 il. col

Mención de serie: Understanding Complex Systems

ISBN: 9783319520452 9783319520445 9783319520469 9783319848051

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