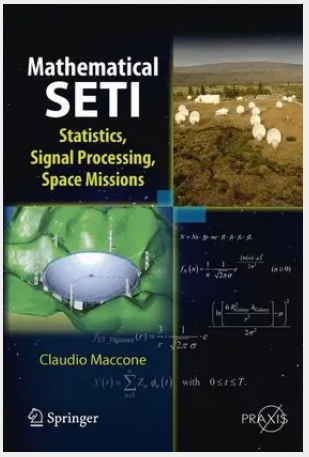
Maccone

Mathematical SETI

Statistics, Signal Processing, Space Missions



This book introduces the Statistical Drake Equation where, from a simple product of seven positive numbers, the Drake Equation is turned into the product of seven positive random variables. The mathematical consequences of this transformation are demonstrated and it is proven that the new random variable N for the number of communicating civilizations in the Galaxy must follow the lognormal probability distribution when the number of factors in the Drake equation is allowed to increase at will. Mathematical SETI also studies the proposed FOCAL (Fast Outgoing Cyclopean Astronomical Lens) space mission to the nearest Sun Focal Sphere at 550 AU and describes its consequences for future interstellar precursor missions and truly interstellar missions. In addition the author shows how SETI signal processing may be dramatically improved by use of the Karhunen-Loève Transform (KLT) rather than Fast Fourier Transform (FFT). Finally, he describes the efforts made to persuade the UnitedNations to make the central part of the Moon Far Side a UN-protected zone, in order to preserve the unique radio-noise-free environment for future scientific use.

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