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Titolo	Open Source Tools for Physics Data Analysis : An Introduction / / by Sebastiano Vasi, Ulderico Wanderlingh, Giuseppe Mandaglio
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Soggetti	Mathematical physics Computer simulation Open source software Quantitative research Computational Physics and Simulations Open Source Data Analysis and Big Data
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Nota di contenuto	Introduction -- Operative systems and Linux Shells -- Rudimental in programming -- Why Object Oriented programming -- Analysis Framework -- Data elaboration and visualization -- Experimental data acquisition and analysis.
Sommario/riassunto	This textbook aims to provide computing skills to analyze data collected by means of several types of experiments. Generally speaking, the analysis of data is complementary to experimental and/or theoretical activities, but, as a matter of fact, a fundamental part of the training process in scientific degree courses (such as physics, mathematics, chemistry, biology, and engineering) consists in different laboratory activities, collecting data and then analyzing and interpreting them. Different analysis tools are available for this purpose, including commercial and open-sources ones. Some of them allow to analyze data in a user-friendly manner, and it can be helpful for the first approach for a student to a data analysis problem, but, at the same time, it represents a limit on the real possibility that students can achieve by using the computation potentiality offered by a good

knowledge of programming languages. For this reason, at least a computing course is generally present in scientific degree courses, as well as in experimental laboratories in which part of the training time is devoted to analyze and visualize data. Part of the book is devoted to furnish the rudiments of programming in C++, Python, and other open-source languages. In the second part, Root, a powerful and open-source data analysis framework, and the universe of the Python libraries will be introduced as a complete tool for data analysis, as well as their application and examples regarding physics experiments performed in laboratories.