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Soggetti	Observations, Astronomical Astronomy—Observations Physical measurements Measurement Signal processing Image processing Speech processing systems Astrophysics Cosmology Space sciences Astronomy, Observations and Techniques Measurement Science and Instrumentation Signal, Image and Speech Processing Astrophysics and Astroparticles Space Sciences (including Extraterrestrial Physics, Space Exploration and Astronautics)
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
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Nota di contenuto	Introduction to Low Frequency Radio Astronomy -- LOFAR Overview -- LOFAR station processing -- RFI flagging, Demixing and Visibilities Compression -- Correlator and Online Processing -- Introduction to Calibration -- Error Analysis in LOFAR Data -- Calibration of LOFAR interferometric data -- Ionospheric Effects -- Wide Field Imaging --

The Standard Imaging Pipeline -- Polarization Imaging with LOFAR -- Long Baseline Imaging with LOFAR -- Calibration of LOFAR Spectral Line data -- Beam-formed Data with LOFAR -- Particle Physics with LOFAR -- High Time Resolution with LOFAR.

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## Sommario/riassunto

This book presents lecture materials from the Third LOFAR Data School, transformed into a coherent and complete reference book describing the LOFAR design, along with descriptions of primary science cases, data processing techniques, and recipes for data handling. Together with hands-on exercises the chapters, based on the lecture notes, teach fundamentals and practical knowledge. LOFAR is a new and innovative radio telescope operating at low radio frequencies (10-250 MHz) and is the first of a new generation of radio interferometers that are leading the way to the ambitious Square Kilometre Array (SKA) to be built in the next decade. This unique reference guide serves as a primary information source for research groups around the world that seek to make the most of LOFAR data, as well as those who will push these topics forward to the next level with the design, construction, and realization of the SKA. This book will also be useful as supplementary reading material for any astrophysics overview or astrophysical techniques course, particularly those geared towards radio astronomy (and radio astronomy techniques).

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