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Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Introduction -- Cosmology background -- Dark energy and apparent late time acceleration -- Supernovae Ia -- Statistical techniques -- Bayesian Doubt: Should we doubt the Cosmological Constant? -- Bayesian parameter inference for SNeIa data -- Robustness to Systematic Error for Future Dark Energy Probes -- Summary and Conclusions -- Index.
Sommario/riassunto	This thesis explores advanced Bayesian statistical methods for extracting key information for cosmological model selection, parameter inference and forecasting from astrophysical observations. Bayesian model selection provides a measure of how good models in a set are relative to each other - but what if the best model is missing and not included in the set? Bayesian Doubt is an approach which addresses this problem and seeks to deliver an absolute rather than a relative measure of how good a model is. Supernovae type Ia were the first astrophysical observations to indicate the late time acceleration of the Universe - this work presents a detailed Bayesian Hierarchical Model to infer the cosmological parameters (in particular dark energy) from observations of these supernovae type Ia.