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Nota di contenuto	Mass and Radius of the Star -- Basic Models and Properties of Dense Nuclear Matter -- Superconductivity and Superfluidity in a Compact Star -- Neutrino Emissivity and Cooling of the Star -- Discussion.
Sommario/riassunto	The purpose of these lectures is to address the following two strongly coupled issues: • What is the ground state (and its properties) of dense (quark) matter? • What is the matter composition of a compact star? In order to fulfill their primary goal - to remain both concise and accessible to the beginning graduate student or other newcomers to the field - the only prerequisites are a working knowledge of statistical mechanics and thermodynamics as well as a first course in quantum field theory. More advanced material will be introduced as the text progresses and an appendix covers basic elements of thermal quantum field theory at finite chemical potential. Instead of developing all relevant formal tools (which is not even fully possible in the regime of QCD considered here), calculations are physically motivated, making the reader familiar with the theories and technicalities by “learning by

doing”. In this way these lectures will guide and prepare the reader towards further investigations and own theoretical research in this exciting field at the interface of nuclear, particle and astrophysics.