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Nota di contenuto	Intro -- CONTENTS -- Foreword -- Preface -- Stability of Matter Rafael D. Benguria and Benjamn A. Loewe -- 1. Introduction: The stability of quantum systems: A historical overview -- 2. Stability of Matter: The classical proof of Lieb and Thirring -- 2.1. Stability of the hydrogen atom in non-relativistic quantum mechanics -- 2.2. Stability of a system of N electrons in non-relativistic quantum mechanics -- 2.3. Stability of a many particle system via Thomas-Fermi theory -- 2.4. Bibliographical remarks -- 3. Lieb-Thirring Inequalities -- 3.1. Use of commutation methods to prove the Lieb-Thirring inequality for $= 3/2$ in dimension 1 -- 3.2. The Eden-Foias bound ([46]) -- 3.3. Bibliographical remarks -- 4. Electrostatic Inequalities -- 5. The Maximum Number of Electrons an Atom Can Bind -- 5.1. The maximum number of electrons for a one center case in the Thomas-Fermi model -- 5.2. Bound on $N_c(Z)$ for the TFW model in the atomic case -- 6. The Stability of Matter for a Relativistic Toy Model -- 6.1. Bibliographical remarks -- 7. A New Lieb-Oxford Bound with Gradient Corrections -- Acknowledgments -- Appendix: A Short History of the Atom -- References -- Mathematical Density and Density Matrix

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#### Sommario/riassunto

This volume is based on lectures given during the program Complex Quantum Systems held at the National University of Singapore's Institute for Mathematical Sciences from 17 February to 27 March 2010. It guides the reader through two introductory expositions on large Coulomb systems to five of the most important developments in the field: derivation of mean field equations, derivation of effective Hamiltonians, alternative high precision methods in quantum chemistry, modern many body methods originating from quantum information, and - the most complex - semirelativistic quantum electrodynamics.

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<b>Titolo</b>	The Algorithmic Beauty of Plants / / by Przemyslaw Prusinkiewicz, Aristid Lindenmayer
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<b>Note generali</b>	Bibliographic Level Mode of Issuance: Monograph
<b>Nota di bibliografia</b>	Includes bibliographical references and index.
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## About the figures -- Turtle interpretation of symbols.

### Sommario/riassunto

The beauty of plants has attracted the attention of mathematicians for Mathematics centuries. Conspicuous geometric features such as the bilateral sym- and beauty metry of leaves, the rotational symmetry of flowers, and the helical arrangements of scales in pine cones have been studied most exten- sively. This focus is reflected in a quotation from Weyl [159, page 3], "Beauty is bound up with symmetry. " This book explores two other factors that organize plant structures and therefore contribute to their beauty. The first is the elegance and relative simplicity of developmental algorithms, that is, the rules which describe plant development in time. The second is self-similarity, characterized by Mandelbrot [95, page 34] as follows: When each piece of a shape is geometrically similar to the whole, both the shape and the cascade that generate it are called self-similar. This corresponds with the biological phenomenon described by Herman, Lindenmayer and Rozenberg [61]: In many growthprocesses of living organisms, especially of plants, regularly repeated appearances of certain multicellular structures are readily noticeable. . . . In the case of a compound leaf, for instance, some of the lobes (or leaflets), which are parts of a leaf at an advanced stage, have the same shape as the whole leaf has at an earlier stage. Thus, self-similarity in plants is a result of developmental processes. Growth and By emphasizing the relationship between growth and form, this book form follows a long tradition in biology.