

1. Record Nr.	UNINA9910467272503321
Autore	Vignale Giovanni
Titolo	The Beautiful Invisible : Creativity, Imagination, and Theoretical Physics
Pubbl/distr/stampa	Oxford : , : Oxford University Press, Incorporated, , 2011 ©2011
ISBN	0-19-102950-5
Descrizione fisica	1 online resource (320 pages)
Disciplina	530
Soggetti	Electronic books.
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Cover -- Contents -- 1 Reality is invisible -- 2 The way of the abstract -- A science within the science -- The tapestry -- Fantastic precision -- The formal and the abstract -- Praise of the abstract -- 3 Limits -- Discontinuity from continuity -- Zeno's paradox -- Two degrees of separation -- Galileo and Aristotle -- Privileged frames -- The laws of dynamics -- Illuminations -- Newton and Kepler -- Aristotle and Newton -- Aristotle with a twist -- Vortices -- 4 Laws are made to be broken -- Law and order -- Broken symmetry -- Permanence is but a word of degrees -- Circles -- 5 Of first and last things -- An issue of control -- The Second Law -- The reality of atoms -- Maxwell's demon -- The exception and the rule -- The same things return -- Overwhelming questions -- 6 Representations -- Geometry and coordinates -- Space-time -- Einstein's relativity -- $E=mc^2$ -- The general theory -- A lesson from the Nazis -- 7 The invisible light -- A call from the mountain -- Electromagnetic field: an epic in four books -- Electromagnetic waves -- Radiation and retardation -- The principle of superposition -- Interference and rays -- Ether and the void -- 8 The double helix -- Mechanics and geometry -- Harmonic oscillator -- Symmetry and conservation laws -- Oscillators of light -- 9 Quantum mechanics: the triumph of the abstract -- In the cockpit -- The mystery -- Prying into the mystery -- The oracle -- The uncertainty principle -- Complex numbers -- Wave functions in action -- The quantum state -- The no-cloning theorem -- Quantum pragmatism or quantum reality? -- 10 Tales of quantum reality --

Seeing in the dark -- 'A watched pot never boils' -- How to share a secret -- Two halves of the same body -- Bell's inequality -- Teleportation -- Quantum computation -- Kids' physics -- 11 The spinning electron and other metaphors -- Doublets. A good question with a better answer -- Spinors -- The exclusion principle -- Dirac's void -- Quantum field theory -- Superconductivity -- 12 Margarita -- Photographic Acknowledgements -- Index.

---

Sommario/riassunto

Theoretical physics, argues Giovanni Vignale, is an endeavour of deep imagination and creativity. And the quest to explain profoundly abstract ideas in concrete images makes it strangely akin to poetry and literature. Vignale leads us through beautiful and bizarre worlds, explaining them in his own unique way.

---