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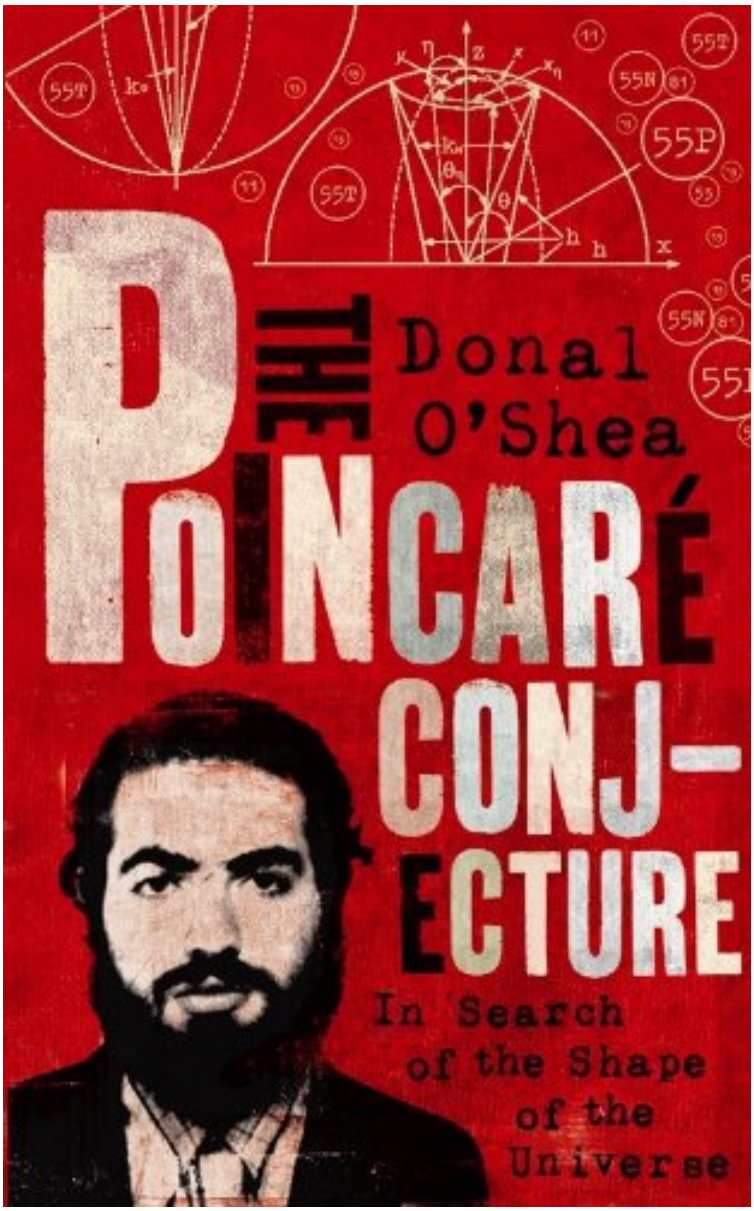
The Poincar Conjecture: In Search of the Shape of the Universe



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Description :

Prsentation de l'diteurThe Poincar Conjecture tells the story behind one of the worlds most confounding mathematical theories. Formulated in 1904 by Henri Poincar, his Conjecture promised to describe the very shape of the universe, but remained unproved until a huge prize was offered for its solution in 2000. Six years later, an eccentric Russian mathematician had the answer.Here, Donal OShea explains the maths behind the Conjecture and its proof, and illuminates the curious personalities surrounding this perplexing

conundrum, along the way taking in a grand sweep of scientific history from the ancient Greeks to Christopher Columbus. This is an enthralling tale of human endeavour, intellectual brilliance and the thrill of discovery.From Publishers WeeklyThe reclusive Russian mathematician Grigory Perelman became a minor media celebrity last summer when he refused the prestigious Fields medal, awarded every four years to a mathematician under the age of 40. Perelman had succeeded in solving the Poincar conjecture, named for 19th-century French mathematician Henri Poincar, and which contemporary cosmologists believe has implications for our understanding of the shape of the universe. O'Shea, a professor of mathematics at Mount Holyoke College, begins his account of the long and contentious search for a solution to the puzzle by looking at how we came to understand the shape of the Earth, beginning with the Greeks, in particular Pythagoras and Plato. Writing for generalist science buffs, O'Shea gives a brief course in geometry and in topology and the topological structures called manifolds that are the basis of Poincar's puzzle. Inexplicably, however, O'Shea doesn't give readers a formal statement of the conjecture itself until well into the book. O'Shea describes mind-bending structures in topology as clearly as most of us can describe a cube, but readers will need to do a little Wikipedia-ing first to find out just what it is they're reading about. Illus. (Mar.) Copyright Reed Business Information, a division of Reed Elsevier Inc. All rights reserved.BooklistEuclid's Elements is historically the most popular mathematics book ever written, but one thing about it nagged its readers: its postulate that every line has exactly one line parallel to it. Doubt about the postulate's truth is O'Shea's starting point for this accessible if challenging presentation of a famous problem ultimately rooted in the parallel postulate. The great mathematician Henri Poincare (1854-1912) spent years investigating the implications of non-Euclidian space. Aided by diagrams and analogies, O'Shea, a professional mathematician, explains non-Euclidian spaces, populated by objects technically called manifolds and n-spheres (n means the number of dimensions), which leads to Poincare's conjecture, verbatim: "Is it possible that the fundamental group of a manifold could be the identity, but that the manifold might not be homeomorphic to the three-dimensional sphere?" Readers defeated by such language, despite O'Shea's valiant nonnumerical clarity, can yet digest the author's connection of the conjecture to the shape of the universe, the biographical portraits that animate his text, and the drama of the conjecture's proof, announced in 2006. Gilbert TaylorCopyright American Library Association. All rights reserved