Título: Scale Relativity And Fractal Space-Time.

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This book provides a comprehensive survey of the development of the theory of scale relativity and fractal space-time. It suggests an original solution to the disunified nature of the classical-quantum transition in physical systems, enabling the basis of quantum mechanics on the principle of relativity, provided this principle is extended to scale transformations of the reference system. In the framework of such a newly generalized relativity theory (including position, orientation, motion and now scale transformations), the fundamental laws of physics may be given a general form that unifies and thus goes beyond the classical and quantum regimes taken separately. A related concern of this book is the geometry of space-time, which is described as being fractal and nondifferentiable. It collects and organizes theoretical developments and applications in many fields, including physics, mathematics, astrophysics, cosmology and life sciences.