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-- 7. Epilogue: The Dream -- Postscript: Run 2 -- Glossary --

Bibliography -- Index

Sommario/riassunto A concise introduction to the cutting-edge science of particle

physicsThe standard model of particle physics describes our current

understanding of nature's fundamental particles and their interactions, vet gaps remain. For example, it does not include a quantum theory of gravity, nor does it explain the existence of dark matter. Once complete, however, the standard model could provide a unified description of the very building blocks of the universe. Researchers have been chasing this dream for decades, and many wonder whether such a dream can ever be made a reality. Can the Laws of Physics Be Unified? is a short introduction to this exciting frontier of physics. The book is accessibly written for students and researchers across the sciences, and for scientifically minded general readers. Paul Langacker begins with an overview of the key breakthroughs that have shaped the standard model, and then describes the fundamental particles, their interactions, and their role in cosmology. He goes on to explain field theory, internal symmetries, Yang-Mills theories, strong and electroweak interactions, the Higgs boson discovery, and neutrino physics. Langacker then looks at the questions that are still unanswered: What is the nature of the mysterious dark matter and dark energy that make up roughly 95 percent of the universe? Why is there more matter than antimatter? How can we reconcile quantum mechanics and general relativity? Can the Laws of Physics Be Unified? describes the promising theoretical ideas and new experiments that could provide answers and weighs our prospects for establishing a truly unified theory of the smallest constituents of nature and their interactions.