

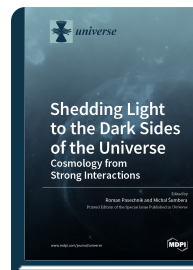
*Special Issue Reprint*

## **Shedding Light to the Dark Sides of the Universe: Cosmology from Strong Interactions**

[www.mdpi.com/books/reprint/6491](http://www.mdpi.com/books/reprint/6491)

Edited by  
Roman Pasechnik  
Michal Šumbera

ISBN 978-3-0365-5869-1 (Hardback)  
ISBN 978-3-0365-5870-7 (PDF)



The theory of quantum chromo dynamics (QCD), an organic part of the standard model (SM) of particle physics, has been validated by many theoretical and experimental studies. The strongly coupled QCD dynamics controls colored particles' (quarks and gluons) collective motion at large spacetime separations and the formation of colorless composite states (hadrons). While QCD theory and the related phenomenology aspects are being intensively studied in laboratory measurements, the possible connections of this important layer of knowledge to cosmology remain rather vague and largely unexplored. No doubt, the physical vacuum has been transformed many times throughout the lifetime of the universe and has affected its history through a sequence of events, such as the cosmic inflation, phase transitions, and the dark-energy-dominated expansion. Strong interactions could play an important role in some of these cosmological events. In particular, the emergence of a new state of matter called the quark-gluon plasma at the LHC is often suggested to provide an important source of empirical knowledge to what the universe looked like in the first few moments after the Big Bang. This Special Issue aims at creating an overview of the recent progress in these directions by focusing on the novel implications of quantum chromo, or more generally, Yang-Mills (YM) dynamics, to the physics of the early universe and critical phenomena in cosmology.

MDPI Books offers quality open access book publishing to promote the exchange of ideas and knowledge in a globalized world. MDPI Books encompasses all the benefits of open access – high availability and visibility, as well as wide and rapid dissemination. With MDPI Books, you can complement the digital version of your work with a high quality printed counterpart.



## Open Access

Your scholarly work is accessible worldwide without any restrictions. All authors retain the copyright for their work distributed under the terms of the Creative Commons Attribution License.



## Author Focus

Authors and editors profit from MDPI's over two decades of experience in open access publishing, our customized personal support throughout the entire publication process, and competitive processing charges as well as unique contributor discounts on book purchases.



## High Quality & Rapid Publication

MDPI ensures a thorough review for all published items and provides a fast publication procedure. State-of-the-art research and time-sensitive topics are released with a minimum amount of delay.



## High Visibility

Due to our global network and well-known channel partners, we ensure maximum visibility and broad dissemination. Title information of books is sent to international indexing databases and archives, such as the Directory of Open Access Books (DOAB), and the Verzeichnis Lieferbarer Bücher (VLB).



## Print on Demand and Multiple Formats

MDPI Books are available for purchase and to read online at any time. Our print-on-demand service offers a sustainable, cost-effective and fast way to publish MDPI Books printed versions.