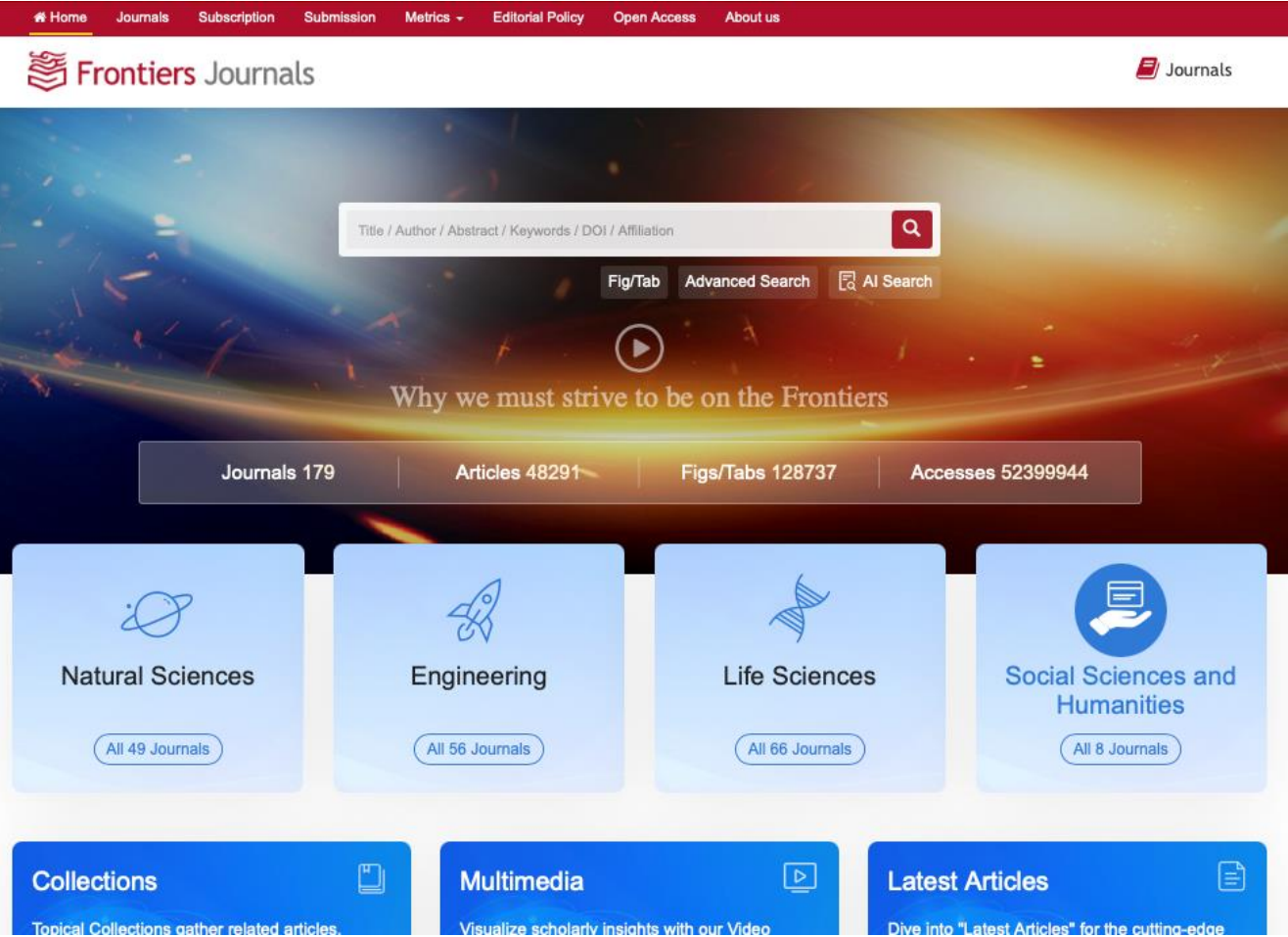


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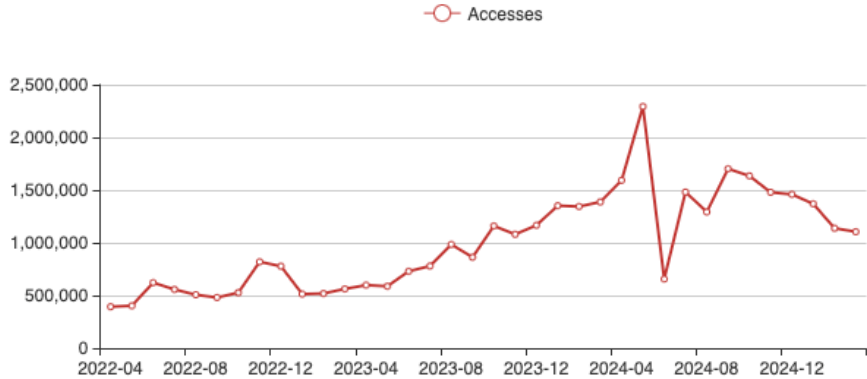
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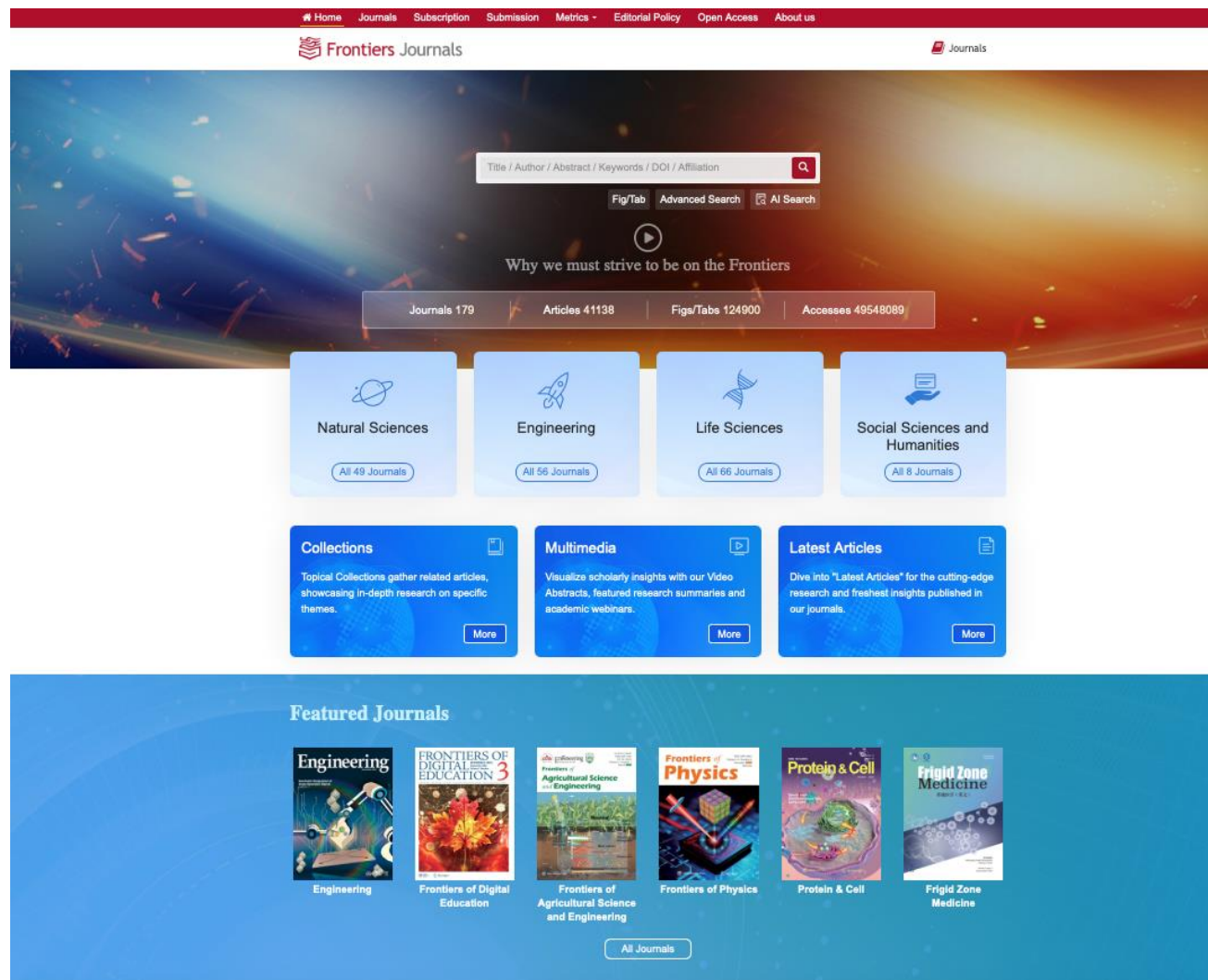
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06

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Original Article

New findings of *Changxingaspis* (Xiu-shu-laspidae, Galeaspida) from the Silurian of Tarim Basin and Zhejiang Province, China

Xutong LI, Yumeng ZHANG, Xianghong LIN, Min ZHU, Wenjin ZHAO, Lizhou TANG, Xianren SHAN, Zhikun GAI

Acta Geologica Sinica (English Edition), 2024, 98(3): 531-540. <https://doi.org/10.1111/1755-6724.15168>

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多形态摘要体系

结构化摘要：清晰呈现研究目的、方法、结果和结论，便于快速把握文章核心。

内容亮点：突出创新点，吸引读者深入阅读。

图摘要：利用图形化手段对文章内容进行高度概括

视频摘要：以视频形式展现研究重点，适合快节奏阅读，提升学术成果展示效果。

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视频摘要



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Plant-root microbiota interactions in nutrient utilization

Haoran XU¹, Weidong LIU¹, Yuhang HE², Di ZOU², Jinghang ZHOU², Jingying ZHANG¹, Yang BAI³

Author information

History

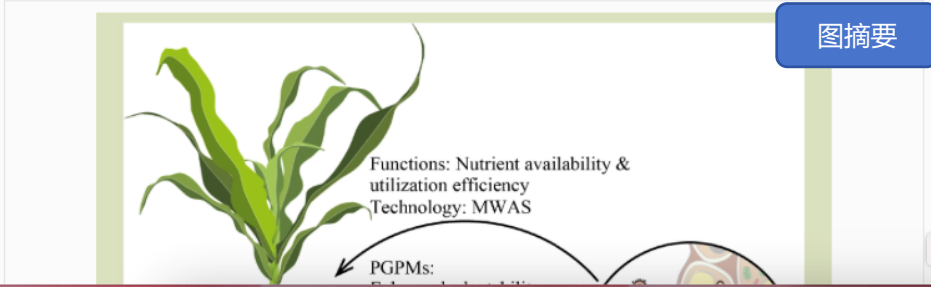
Highlights

- Soil nutrient conditions shape the root microbiota composition.
- Plant nutrient-utilizing genes drive the assembly of root microbiota.
- Root microbiota enhances nutrient availability for plants.
- Root microbiota modulates plant gene expression to promote nutrient utilization efficiency through phytohormone.
- Microbiome genome- and microbiome-wide association studies offer novel approaches to deeply explore the interactions between plants and their root microbiota.
- Utilizing root microbiota is a promising strategy to improve crop nutrient utilization in agriculture.

Abstract

Natural plant roots enrich a diverse array of soil microbes, collectively known as the root microbiota. This microbiota interacts synergistically with plants, modulating various physiological processes, including nutrient utilization, which influences plant growth and health. Environmental nutrient conditions and plant nutrient-related genes have been reported to regulate the composition of the root microbiota. Innovative analytical methods, such as microbiome genome- and microbiome-wide association studies, have advanced understanding of the relationships between plants and root microbiota. These methods systematically reveal the interactions between root microbiota and plant nutrient utilization, providing a theoretical foundation for applying root microbiota in agriculture.

Graphical abstract



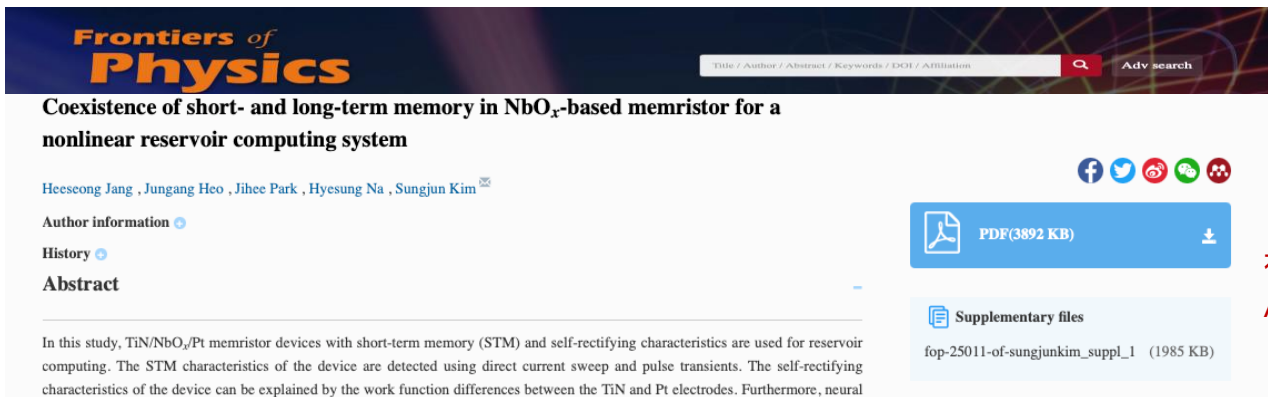
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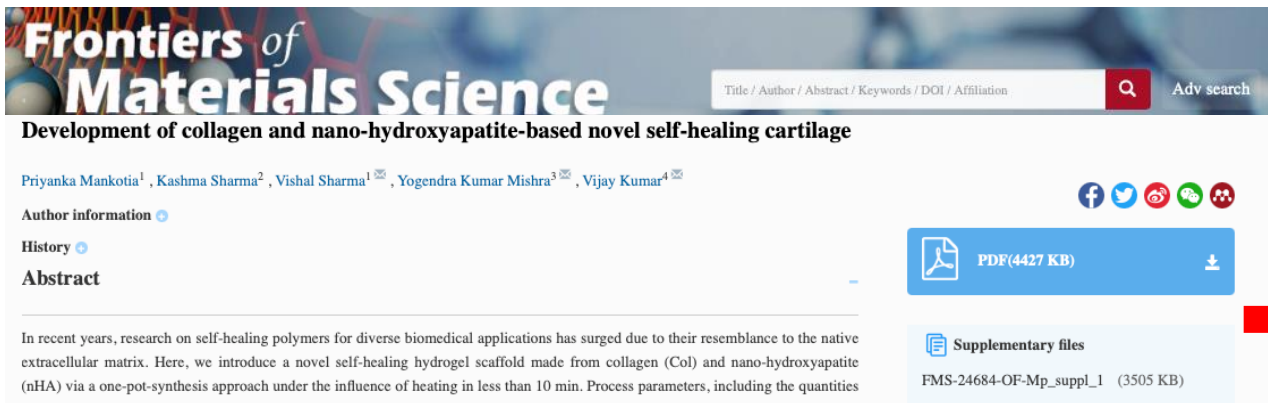
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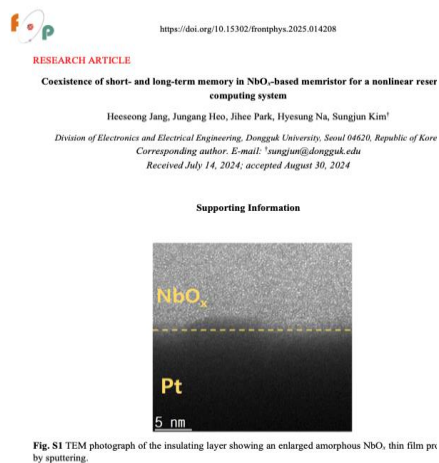


Table S1 Comparison of previously reported energy consumption.

No	Structure	Energy consumption	Ref.
1	Ag/TiO ₂ /Ti	18.82 nJ	[S1]
2	Pt/TaO ₂ /TiO ₂ /Ti	12.69 nJ	[S2]
3	Au/LaMoO ₃ /Au	200 pJ	[S3]
4	TiN/TiO ₂ /TiN	9 nJ	[S4]
5	Ag/GeTe/MoTe ₂ /Pt	30 nJ	[S5]
6	Au/PMMA/Ag/MoO ₃ /PHT/PCBM/ZnO/ITO	50 nJ	[S6]
7	Ag/TaO ₂ -TaO ₂ /N-Si	4.5 nJ	[S7]
8	TiN/NbO ₂ /TiN	80 pJ	[S8]
9	TiN/Ta ₂ N ₅ /HfO ₂ /TiN	750 pJ	[S9]
10	TiN/NbO ₂ /Pt	200 pJ	This work

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- [S3] X. Zhu, D. Li, X. Liang, and W. D. Lu, Ionic modulation and ionic coupling effects in MoS₂ devices for neuromorphic computing, *Nat. Mater.* 18, 141 (2019) <https://doi.org/10.1038/s41563-018-0248-5>
- [S4] P. Trotti, G. Pillonet, G. Molas, S. Oukassi, and E. Nowak, Experimental Set-Up For Novel Energy Efficient Charge-based Resistive RAM (RRAM) Switching, *IEEE*, 2020
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Previous studies of the nTGC vertex $Z\gamma V^*$ via form factors are not consistent with spontaneously-broken electroweak gauge symmetry of the SM. Recently a new formulation of the nTGC form factor framework has been proposed [23, 24], which is consistently de

[23] J. Ellis, H. J. He, and R. Q. Xiao, Probing neutral triple gauge couplings at the LHC and future hadron colliders, *Phys. Rev. D* 107(3), 035005 (2023)

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decays based on the benchmark luminosity 20 ab^{-1} and e^+e^- collision energy $\sqrt{s} = 240\text{ GeV}$ at the CEPC. With these, we have

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[CrossRef](#) [ADS](#) [arXiv](#) [Google scholar](#)
- [3] G. F. Giudice, . The strongly-interacting light Higgs, *J. High Energy Phys.* 0706, 045 (2007)
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智能化——AI单篇文献双语智能导读



Front. Phys. >> 2025, Vol. 20 >> Issue (1) : 015201. DOI: 10.15302/frontphys.2025.015201

RESEARCH ARTICLE

Probing neutral triple gauge couplings via $Z\gamma(\ell^+\ell^-\gamma)$ production at e^+e^- colliders

Danning Liu^{1,2}, Rui-Qing Xiao^{1,2,3}, Shu Li^{1,2,4}, John Ellis^{3,5,1}, Hong-Jian He^{1,2,4}, Rui Yuan^{1,2}

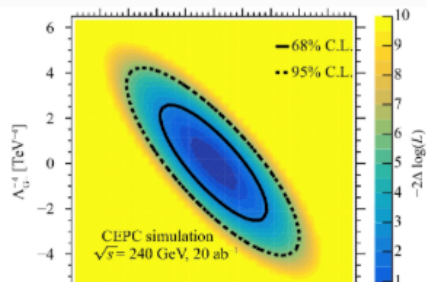
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History

Abstract

Neutral triple gauge couplings (nTGCs) are absent in the Standard Model (SM) and at the dimension-6 level in the Standard Model Effective Field Theory (SMEFT), arising first from dimension-8 operators. As such, they provide a unique window for probing new physics beyond the SM. These dimension-8 operators can be mapped to nTGC form factors whose structure is consistent with the spontaneously-broken electroweak gauge symmetry of the SM. In this work, we study the probes of nTGCs in the reaction $e^+e^- \rightarrow Z\gamma$ with $Z \rightarrow \ell^+\ell^-$ ($\ell = e, \mu$) at an e^+e^- collider. We perform a detector-level simulation and analysis of this reaction at the Circular Electron Positron Collider (CEPC) with collision energy $\sqrt{s} = 240$ GeV and an integrated luminosity of 20 ab^{-1} . We present the sensitivity limits on probing the new physics scales of dimension-8 nTGC operators via measurements of the corresponding nTGC form factors.

Graphical abstract



AI Summary

AI Summary

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Summary of the Paper

Abstract

This paper investigates the possibility of probing neutral triple gauge couplings (nTGCs) through their dimension-8 operators in the context of the Standard Model Effective Field Theory (SMEFT). nTGCs do not appear in the Standard Model (SM) or SMEFT at dimension-6 level, making them unique probes for new physics beyond the SM.

Research Background

Neutral triple gauge couplings (nTGCs) are absent in the Standard Model (SM) and SMEFT at the dimension-6 level, first appearing at the dimension-8 level. They provide a unique window to explore new physics beyond the SM.

Research Method

A detector-level simulation and analysis of the reaction $e^+e^- \rightarrow Z\gamma \rightarrow \ell^+\ell^-\gamma$ ($\ell = e, \mu$) at the Circular Electron Positron Collider (CEPC) with a collision energy of 240 GeV

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Special Topic: Oxide Transistors 1

Editors: Lei Liao, Xingqiang Liu, Cong Ye & Lingyan Liang

Oxide transistors have advanced significantly, gradually replacing materials like amorphous silicon in certain appli-
qualities make them crucial for displays, sensors, and other flexible electronics. However, challenges remain, partic-
advanced than n-type ones. P-type semiconductors with high hole mobility, stability, and easy fabrication are scar-
rapid evolution of display technology has raised the bar for oxide transistor driving technology, making it increasing

专题

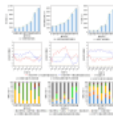
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Strategic Study of Chinese Academy of Engineering, 2024, 26(6): 140-156.
<https://doi.org/10.15302/J-SSCAE-2024.06.012>

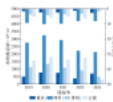
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Guofan Hu, Hongyan Zhao, Jintao He, Minjie Chen, Xing Sh

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[R2] Study on Agricultural Water Resources Utilization and Efficient Regulation Technology of Rainwater Resources in Southwest China]	Investigated agricultural water use, drought characteristics, and rainwater harvesting techniques in Southwest China. Proposed solutions for improving water resource utilization.
[R3] Approaches to Strengthening Flood Risk Management]	Reviewed flood risk management strategies, focusing on risk assessment, planning, and emergency response. Emphasized the integration of natural solutions and emergency preparedness.
[R4] Thoughts and Suggestions on High-Quality Construction of the National Water Network Project]	Analyzed the significance of the national water network and presented case studies. Proposed strategies for its high-quality construction.
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[R6] Historical Evolution and Future Prediction of Hydrological Drought in the Upper Yangtze River Basin]	Analyzed historical drought trends and predicted future drought conditions using the RCCC-WBM model and standardized runoff index (SRI).
[R7] Construction of Collaborative Governance System for "Three Waters" in Agricultural Non-Point Source Pollution in the Yangtze River Delta]	Investigated agricultural non-point source pollution in the Yangtze River Delta. Proposed a collaborative governance system for water resources, water environment, and water ecology.

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