

Beyond Borders, Within Disciplines: A Study of Co-authorships in Sino-Swiss Research Collaboration

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RESEARCH BACKGROUNDS

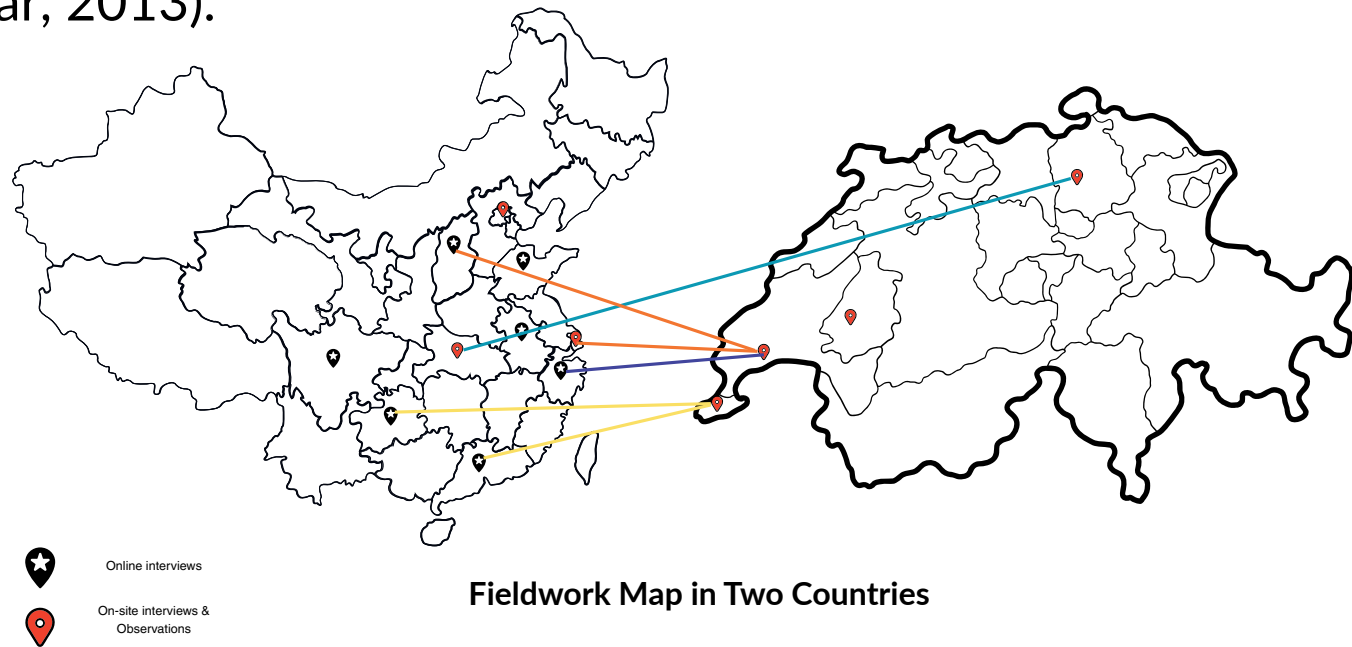
- Amid rising geopolitical tensions, China's scientific collaboration with traditional partners like the United States (U.S.) and the EU has faced increasing strain (Shih & Forsberg, 2023). The EU's de-risking policies and the U.S.'s decoupling strategies reflect the growing distrust and contested narratives surrounding China's role in global science (Zha & Wang, 2025).
- In response, China has strategically shifted focus toward multilateral organisations and bilateral economic relations under its economic diplomacy framework (Kayani & Saleem, 2024).

Why China and Switzerland?

- Against this backdrop, Sino-Swiss collaboration presents a compelling case for examining under-explored dynamics in international research.
- Few studies address Sino-Swiss academic collaboration in depth, a research gap compounded by the scarcity of data on smaller nations like Switzerland in global collaboration analyses (Hoekman et al., 2009).

A STEP INTO THE STEMM LABORATORIES

- The laboratory is where scientists have most of their daily communications and where relationships are most likely to form (Conti & Liu, 2015), and it is also a small scientific community that undertakes technological innovation and the responsibility of knowledge production and talent training (Nakhleh, Polles, & Malina, 2002), while the process of knowledge production inside the laboratory is usually described as a black box (Latour & Woolgar, 2013).



RESEARCH QUESTIONS

How did Sino-Swiss STEMM collaborations evolve between 2001 and 2021?

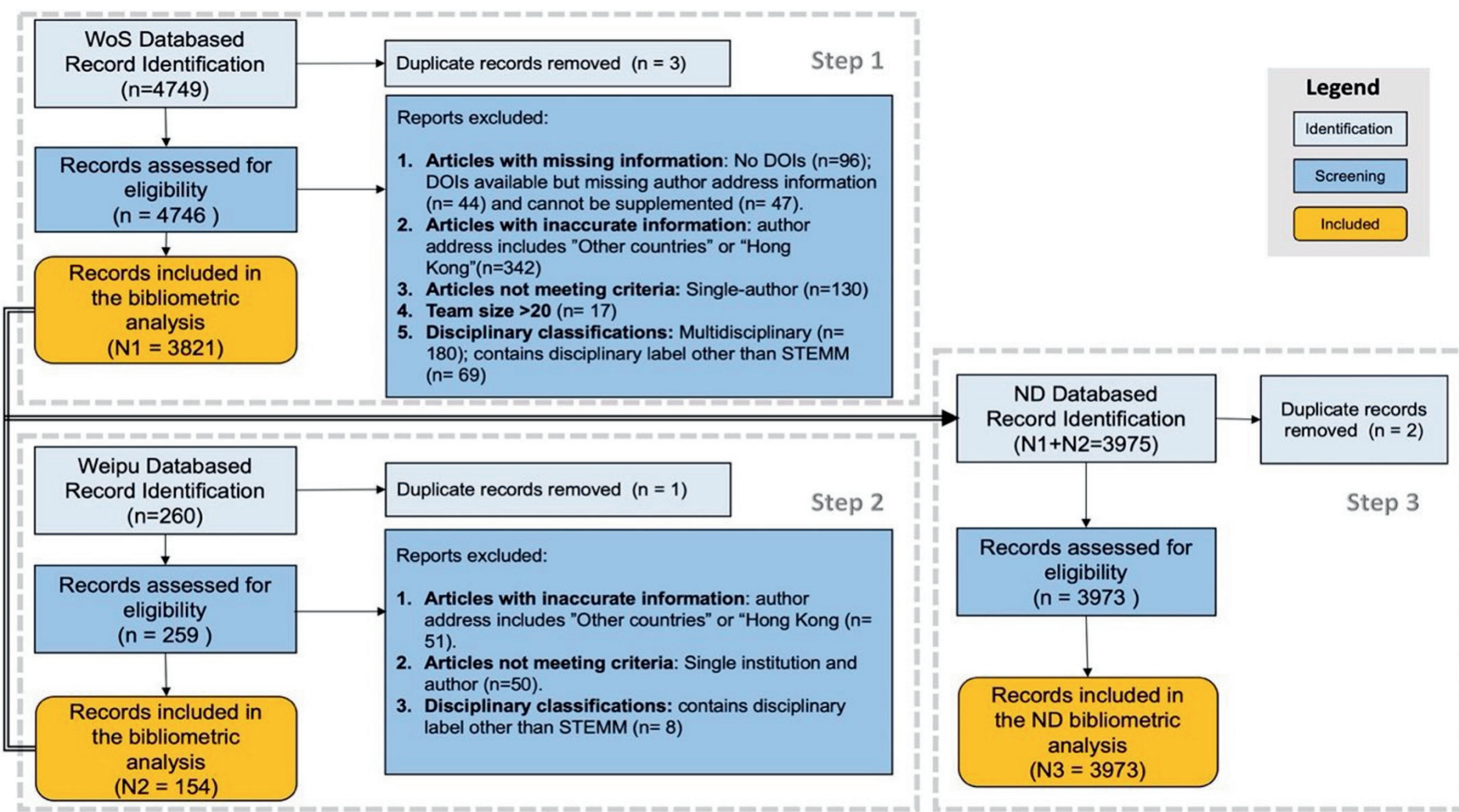
- What quantitative shifts occurred in publication volume, team size, and disciplinary focus?
- How did partnership dynamics evolve, as reflected in the allocation of first, last, and corresponding author roles?

METHODOLOGY

Mixed-method research design and analysis

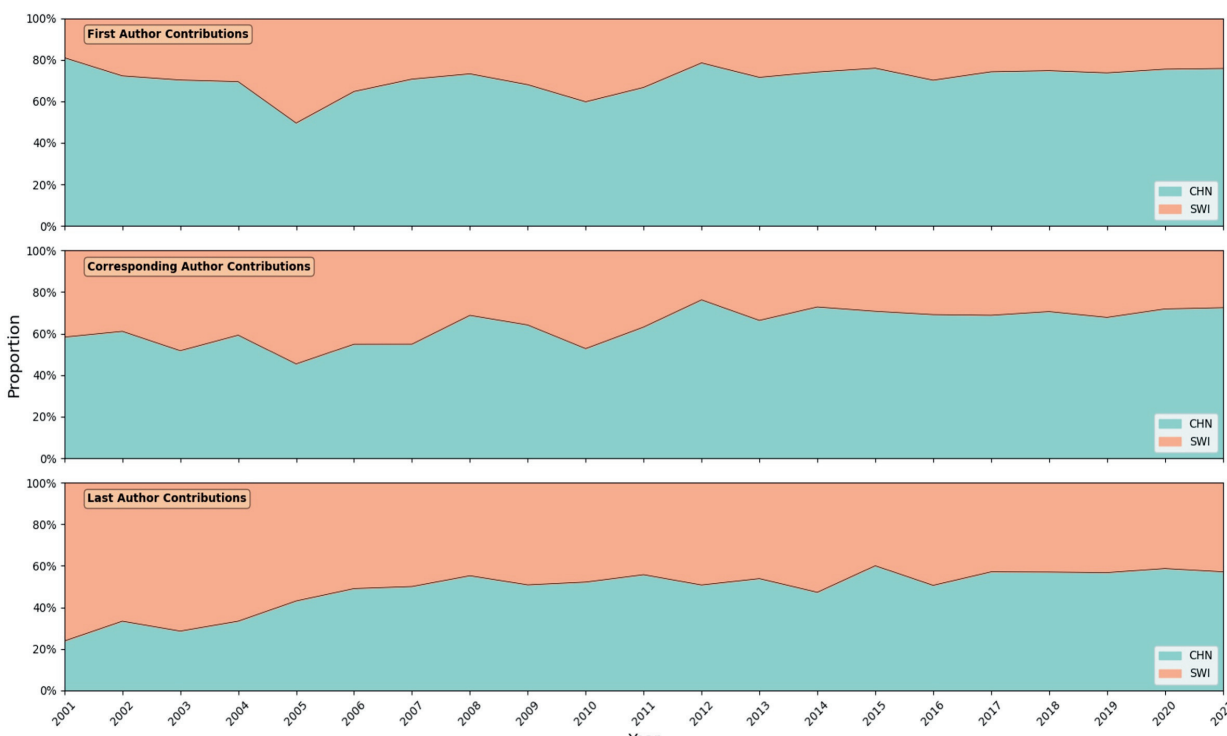
- Bibliometric data with 4,000+ publication records as meta sources
- Interviews with 40 participants (6 pairs; 3 longitudinal for 5+years)
- Five Non-participatory laboratory observations
- Document analysis

BIBLIOMETRIC DATA COLLECTION AND CLEANING PROCESS

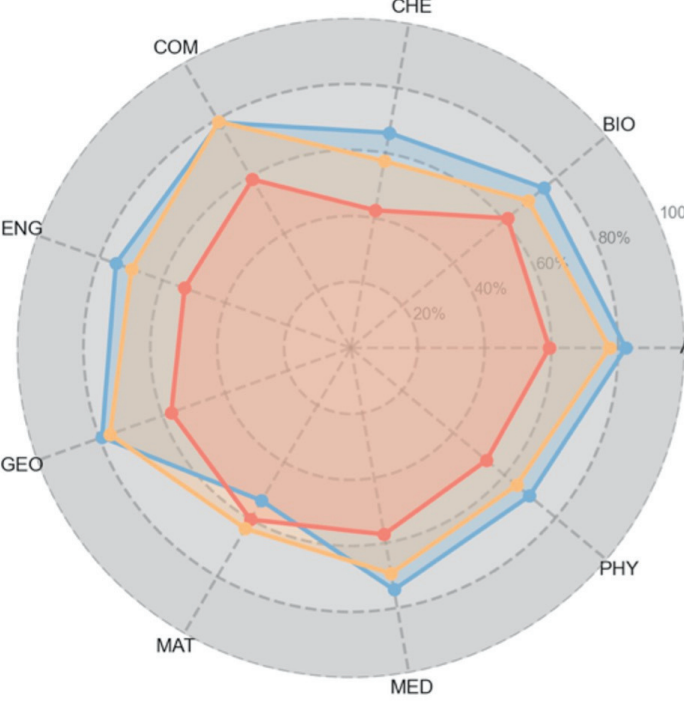


DISPLAY OF MAIN FINDINGS

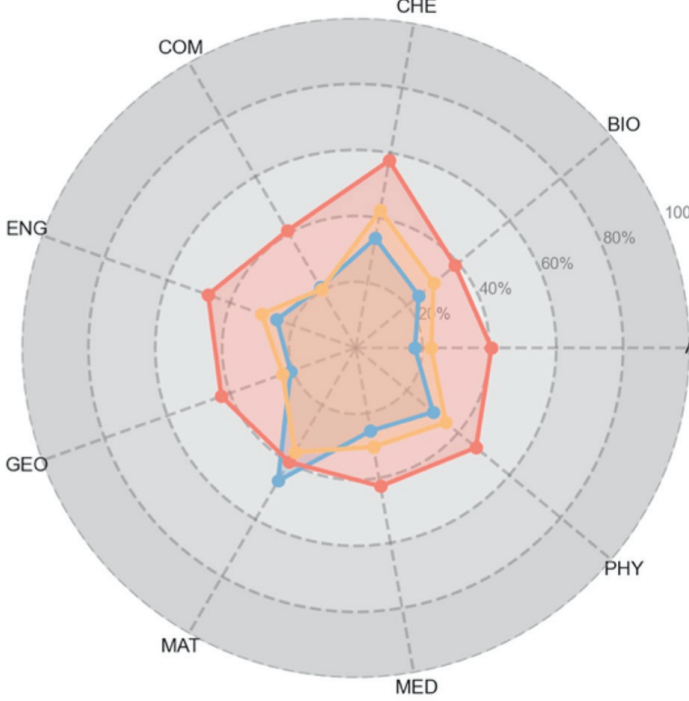
Authorship Contributions by First-, Corresponding-, Last- author (2001-2021)



Authors' Division of Labour by Disciplines (CHN)

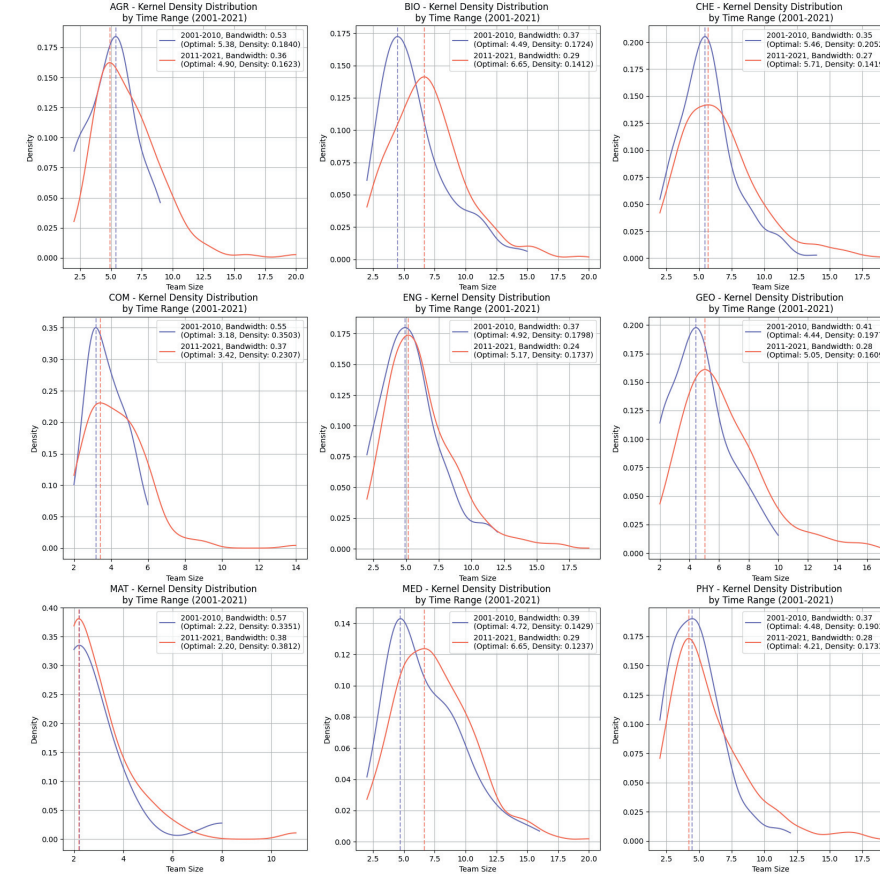


Authors' Division of Labour by Disciplines (SWI)

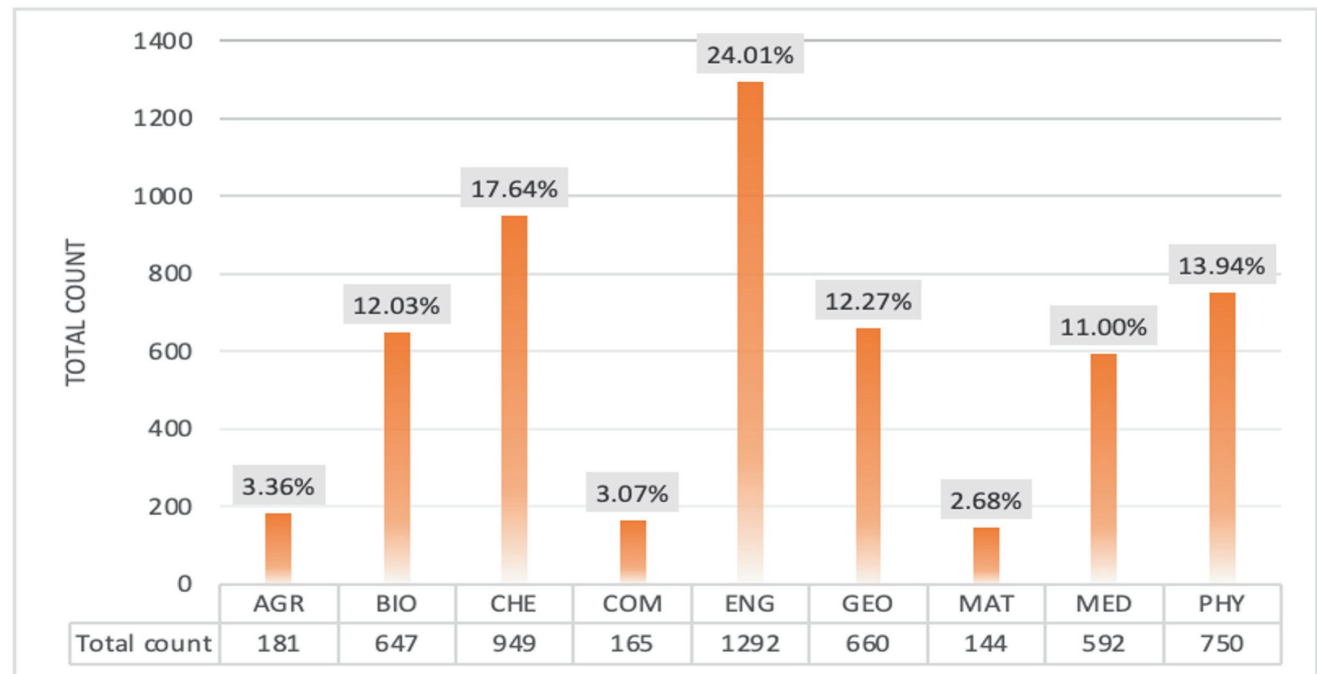


Authors' Division of Labour by Disciplines in China and Switzerland

Kernel Density Distribution of Team Size in Nine Disciplines (2001-2021)



OVERVIEW OF THE DATASET



Nine STEMM broad areas in New Database

IMPLICATIONS FOR HIGHER EDUCATION AND RESEARCH COLLABORATION

- Across most STEMM disciplines, Chinese scholars are more likely to assume first and corresponding authorship roles, while Swiss scholars tend to occupy the last authorship position. Additionally, a trend toward multiple co-authorship is on the rise within the New Database. These observations likely reflect underlying cultural differences and policy influences that shape the assignment of authorship roles. This divergence in the cultural understanding of leadership, as manifested in authorship distributions, warrants further qualitative investigation.
- Scientific collaboration operates on a unique form of trust, shaped by the distinct norms and expectations governing the field. These are essential considerations in international collaboration: acknowledging specific cultural contexts, recognizing different phases of collaboration, and understanding the roles of individual scientists.
- Epistemic injustice connects political philosophy, ethics, and epistemology, offering a framework to analyze how epistemic structures and practices can simultaneously undermine key epistemic values and produce injustices against specific individuals as knowers.

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