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<https://orcid.org/0000-0002-0939-251X> (2008) The ArXiv as a Model for Open Access: An Anthropological Perspective. In: Berlin 6 Open Access Conference, 11-13 Nov 2008, Düsseldorf, Germany.

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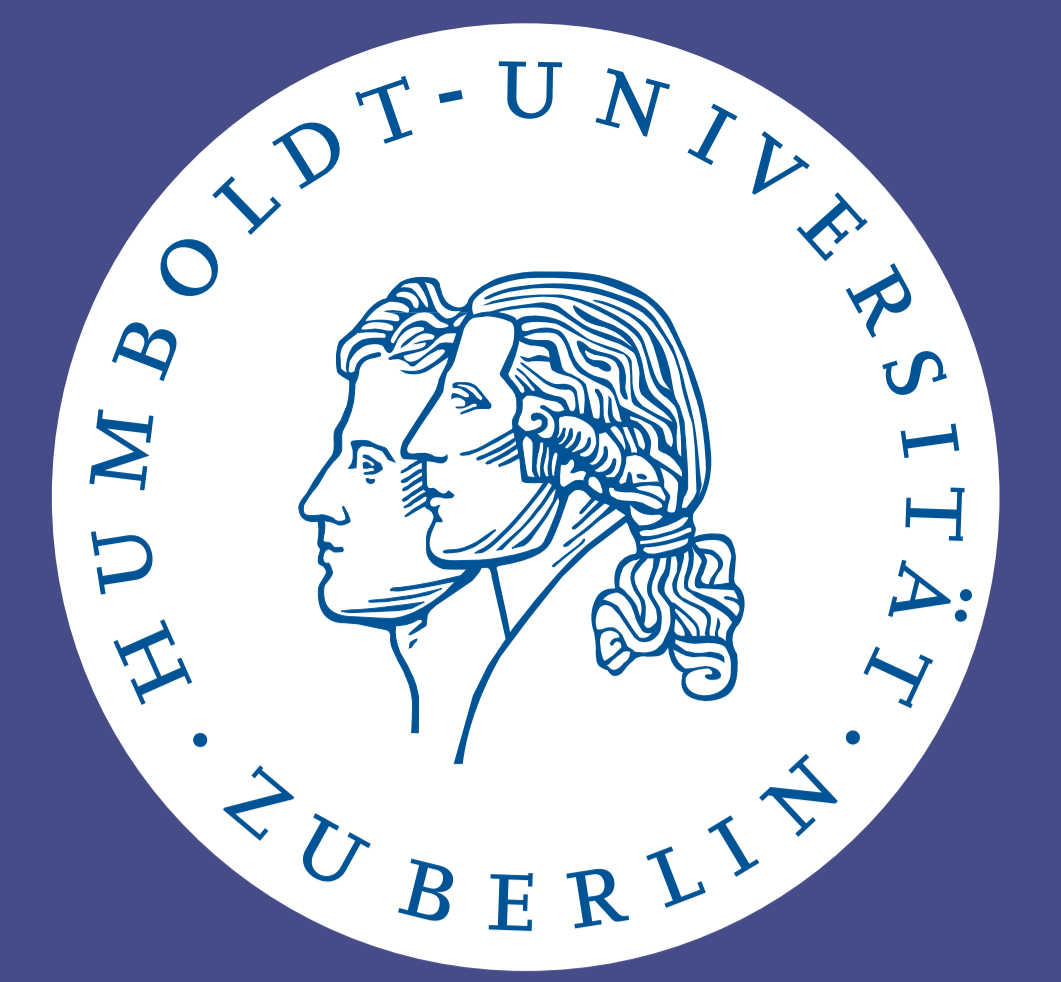
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The arXiv as a Model for Open Access

An Anthropological Analysis

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Why Does the ArXiv Work so Well?

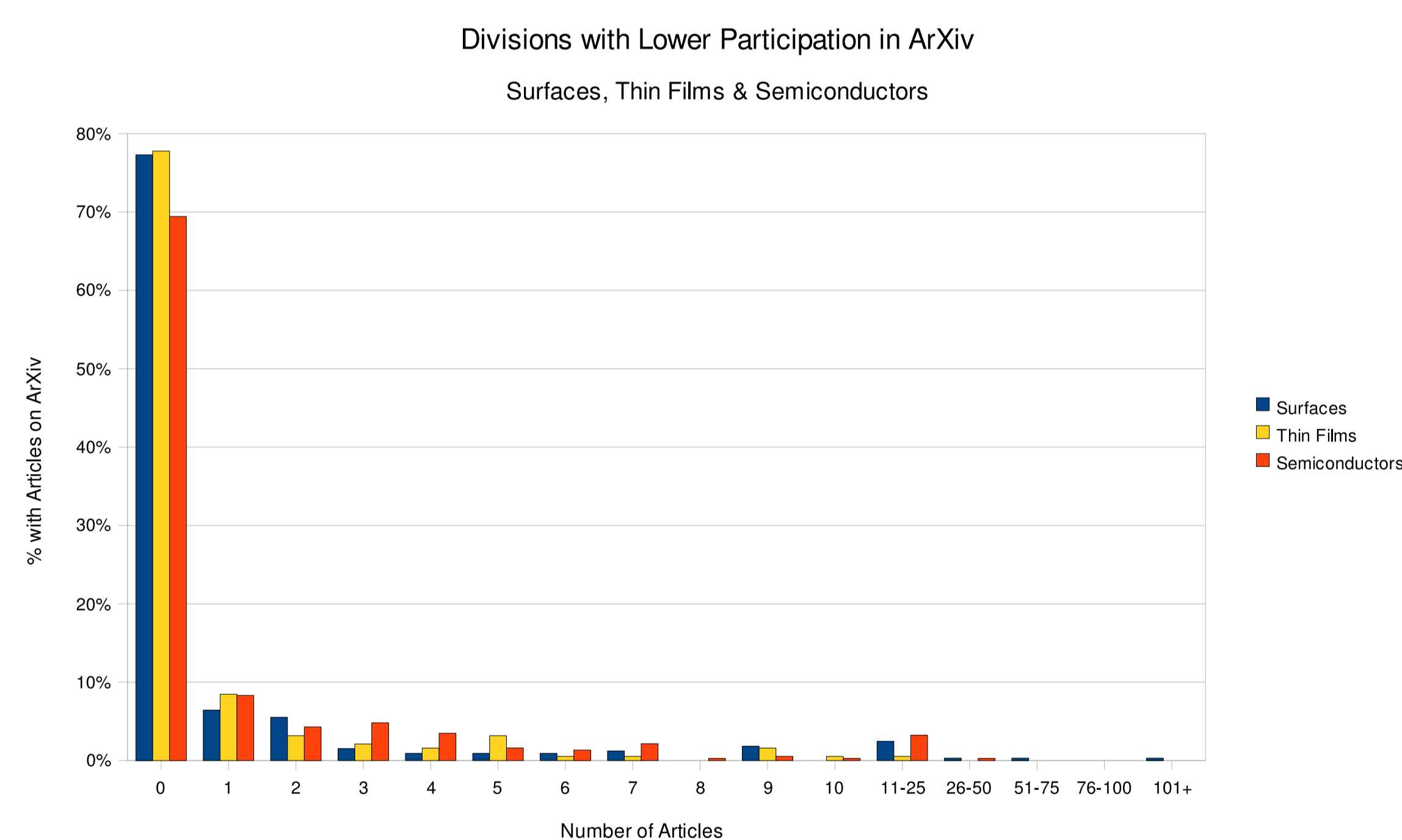
- ▶ The ArXiv is an example of successful scholarly open access communication: a thriving information ecology (Nardi & O'Day, 1999).
- ▶ It has been considered a holy grail for OA communication and there have been attempts to replicate it for other disciplines and even to translate it for an institutional setting.
- ▶ Building ArXiv-model repositories for other disciplines or institutions has not yet proved consistently successful.
- ▶ There are many theories about why the ArXiv works but very little empirical research to prove or disprove them.
- ▶ Using anthropology to understand why and how the ArXiv works is the cornerstone of my research.

Gathering Authorship Data

- ▶ In order to test whether the ArXiv was used universally among a group of active physicists, data were gathered from the Proceedings of the 2008 Meeting of the German Physical Society or Deutsche Physikalische Gesellschaft (DPG).
- ▶ The conference was divided into 10 major divisions, which was regarded as a way to divide physics into subdisciplines.
- ▶ The names of 2316 lead authors were searched on arXiv.org and the total number of publications attributed to that author was noted.
- ▶ Initially, data has been analyzed with greater precision when the number of articles was close to zero.

Variations in Usage

In three DPG Divisions with low ArXiv participation i.e. Surfaces, Thin Films and Semiconductors, there are some interesting, if slight, variations between these divisions in terms of ArXiv usage.



Using Anthropology to Improve Technology Design

- ▶ Anthropology, the study of culture, utilizes the techniques of participant observation (Rock, 2001) to gather large amounts of qualitative data such as interviews, photographs, field notes and 'thick description' (Geertz, 1973) so that an outsider can better understand the world as a 'native'
- ▶ These initial data on ArXiv usage will inform the selection of my study population and are a method of triangulating my qualitative data.
- ▶ Based on Andrew Abbott's (Abbott, 2001) model of academic disciplines and Bonnie Nardi and Victoria O'Day's (Nardi & O'Day, 1999) theory of information ecologies, I argue that the cultures of our target audiences play a large role in the success or failure of the services that we design.
- ▶ By better understanding the culture of our users, we can design better services.

Does the ArXiv Work as Well as we Assume?

Based on the advice and preliminary research by Eberhard Hilf of the Institute for Scientific Networking at the University of Oldenburg, I undertook an analysis of the use of the ArXiv by a group of active physicists - those who presented research at the DPG conference in March 2008 - to see whether ArXiv usage varied between subdisciplines of physics at the conference.

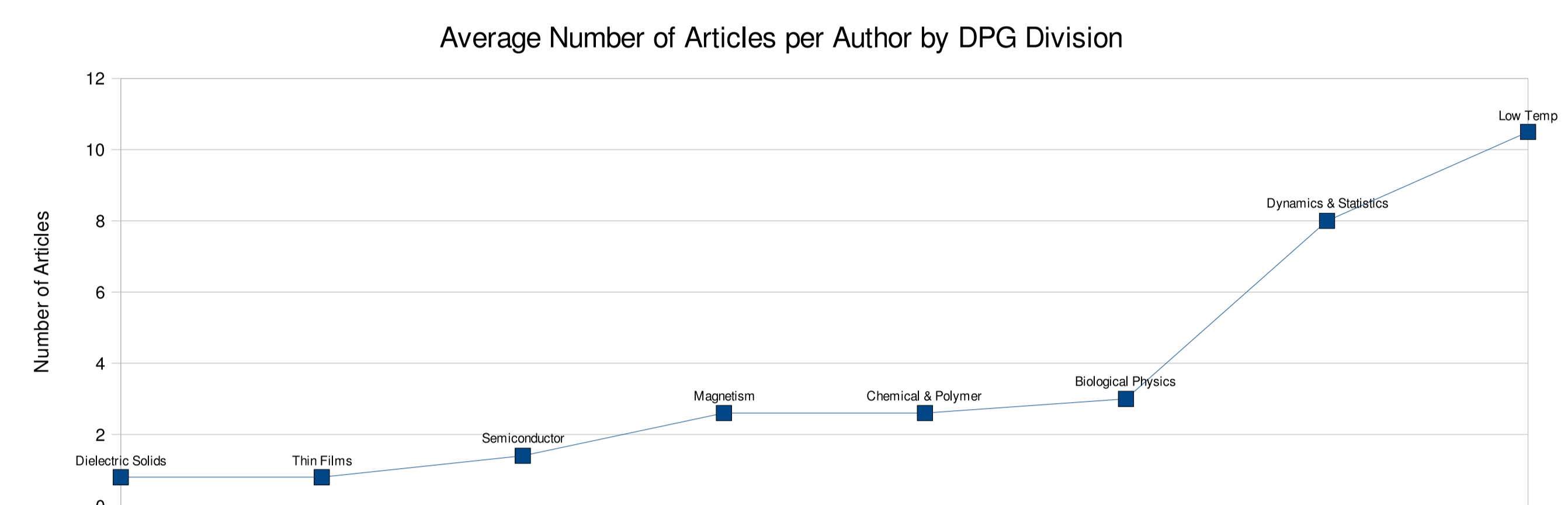


Figure: This figure shows that the ArXiv is not a universally accepted communication medium but that participation varies between subdisciplines, a possibility that has also been pointed out by the ArXiv's creator, Paul Ginsparg (Ginsparg, 1996). The average numbers of articles per person in Low Temperature (10.5) and Dynamics & Statistics (8.3) are more than 10 times the average number in Dielectrical Solids (.8) or Thin Films (.8).

Use and Nonuse of the ArXiv

Though there was an overall average of 28 articles per lead DPG author, more than half of the total authors presenting at the DPG had 0 articles on the ArXiv.

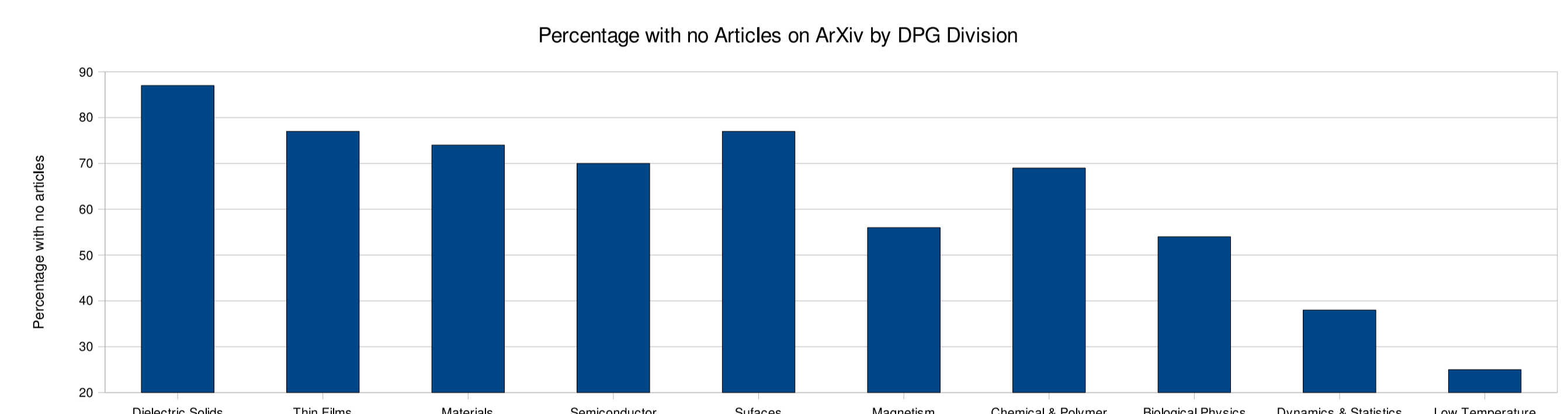


Figure: This graph illustrates the percentage of authors from each DPG Division who are not using the ArXiv. Even in the division with the highest participation, 25% of the authors have no articles on the ArXiv.

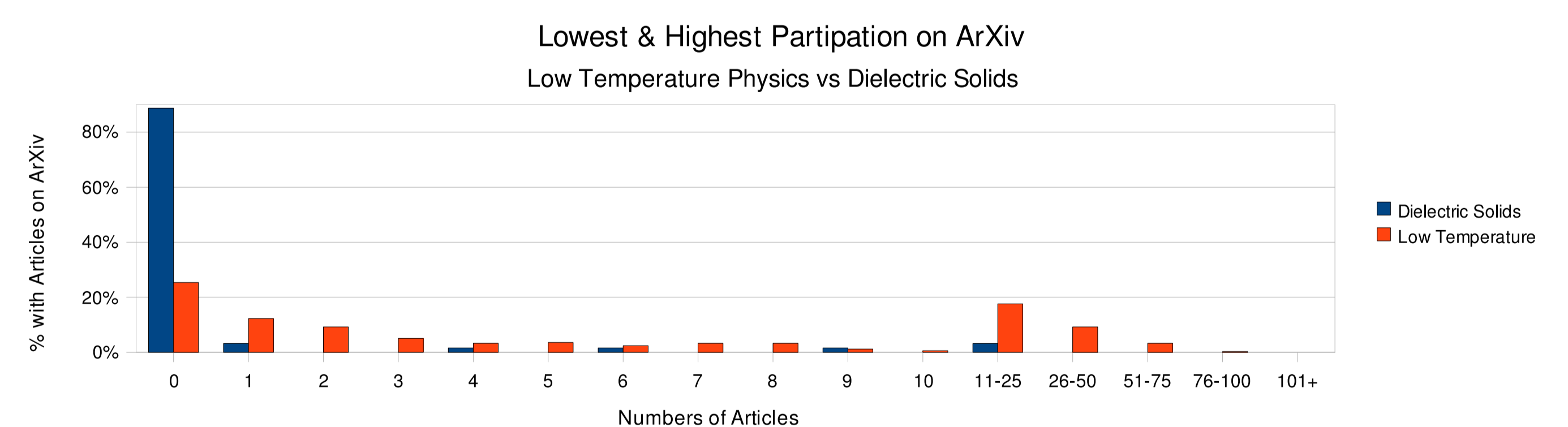


Figure: In this graph, we see the distribution of ArXiv usage between the division with the highest participation - Low Temperature Physics, versus the distribution of ArXiv usage in the division with the lowest participation - Dielectric Solids.

References

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