Large Teams Overshadow Individual Recognition

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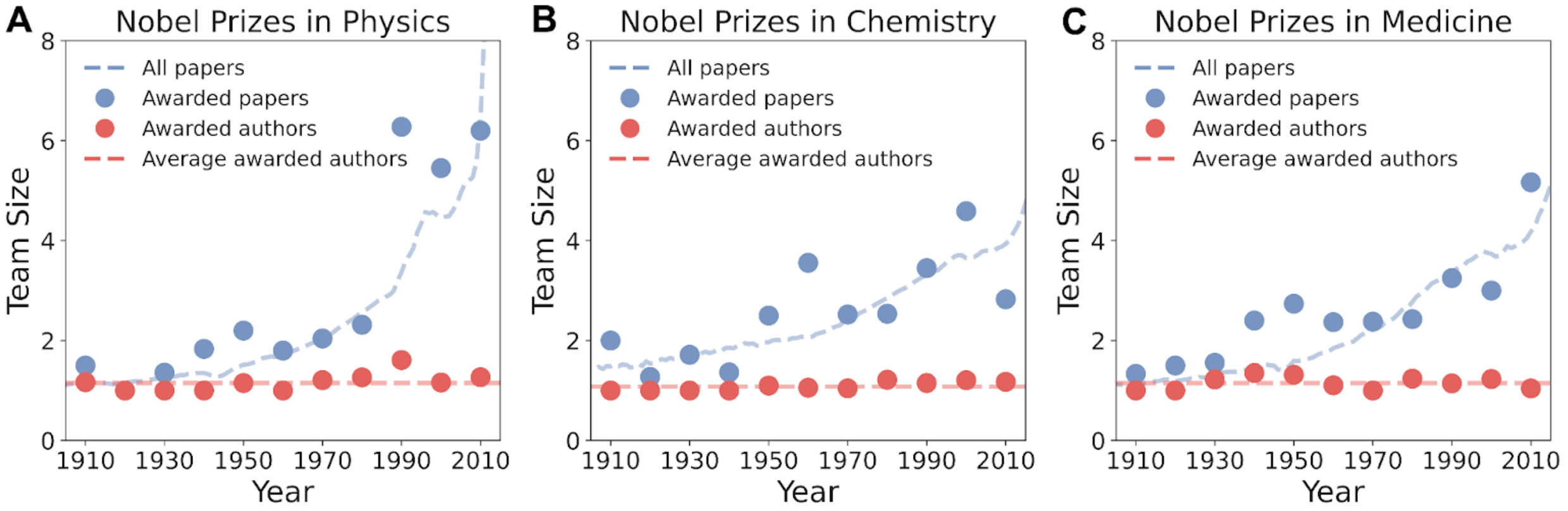
A
Nobel Prizes in Physics
B
Nobel Prizes in Chemistry
C
Nobel Prizes in Medicine
All papers
Awarded papers
Awarded authors
Average awarded authors
Team Size
Year
0
2
4
6
8
1910
1930
1950
1970
1990
2010

Inferred writing contributions

1,159,572 papers; 954,397 authors
(1991 - 2024)

arXiv LaTex files

1.9 million papers; 1.7 million authors
(1991 - 2024)

Topological Transitions for Lattice Bosons in a Magnetic Field

PDF File

Huber and Lindner, 2012

Source Codes

$$\mathcal{H} = -t \sum_{\langle \mathbf{r},\mathbf{r}' \rangle} \left[b^\dagger_{\mathbf{r}} b_{\mathbf{r}'} e^{iA_{\mathbf{r}\mathbf{r}'}} + b^\dagger_{\mathbf{r}} b_{\mathbf{r}'} e^{-iA_{\mathbf{r}\mathbf{r}'}} \right] + \frac{U}{2} \sum_{\mathbf{r}} b^\dagger_{\mathbf{r}} b_{\mathbf{r}} (b^\dagger_{\mathbf{r}} b_{\mathbf{r}} - 1) - \mu \sum_{\mathbf{r}} b^\dagger_{\mathbf{r}} b_{\mathbf{r}}, \tag{5}$$

$$C^\dagger \mathcal{H}^{(0)}_{\mathrm{HC}}(q\mathbf{A}, \mu)\, C = \mathcal{H}^{(0)}_{\mathrm{HC}}(-q\mathbf{A}, -\mu). \tag{17}$$

At half filling for the hard core bosons, the Hamiltonian (15) is independent of μ and hence Eq. (17) implies invariance under $\mathbf{A} \to -\mathbf{A}$. Hence, the Onsager relation $\sigma_{xy}(\mathbf{A}) = -\sigma_{xy}(-\mathbf{A})$ implies that for half integer fillings $(n_b = \frac{1}{2} + m)$

$$\sigma_{xy} = \alpha = 0. \tag{18}$$

$$\mathcal{T}_x \mathcal{T}_y = \mathcal{T}_y \mathcal{T}_x \exp(2\pi i \hat{N}_b / N) \tag{A1}$$

```
\begin{eqnarray}
\label{eqn:BHH}
\cH=&-&t\sum_{\langle \br ,\br'\rangle}
\Bigl[
 b_{\br}^{\dag}b_{\br'}^{\pdag}e^{iA_{\br \br'}}
 + b_{\br}^{\dag}b_{\br'}^{\pdag}e^{-iA_{\br \br'}}
\Bigr]\nonumber\\
&+&\frac{U}{2}\sum_{\br}
b_{\br}^{\dag}b_{\br}^{\pdag}
(b_{\br}^{\dag}b_{\br}^{\pdag}-1)
-\mu\sum_{\br} b_{\br}^{\dag} b_{\br}^{\pdag},
\end{eqnarray}

At half filling for the hard core bosons, the
Hamiltonian~(\ref{xxz}) is
independent of $\mu$ and hence Eq.~(\ref{Part-
hole}) implies invariance
under  ${\bf A}\to -{\bf A}$. Hence, the Onsager
relation $\sigma_{xy}({\bf
A})=-\sigma_{xy}(-{\bf A})$ implies that for half
integer fillings
($n_b=\half+m$)
```

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Default syntax

\mbox{$1\over2$}

Personalized macro

\half

```
\begin{eqnarray}
\label{eqn:BHH}
\cH=&-&t\sum_{\langle \br ,\br'\rangle}
\Bigl[
 b_{\br}^{\dag}b_{\br'}^{\pdag}e^{iA_{\br \br'}}
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b_{\br}^{\dag}b_{\br}^{\pdag}
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\end{eqnarray}

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relation $\sigma_{xy}({\bf
A})=-\sigma_{xy}(-{\bf A})$ implies that for half
integer fillings
($n_b=\half+m$)
```
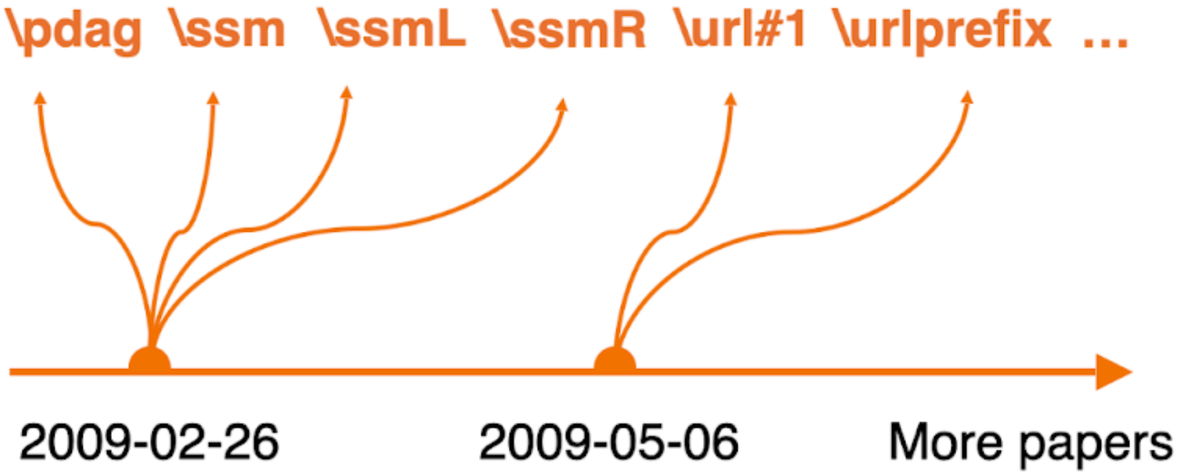
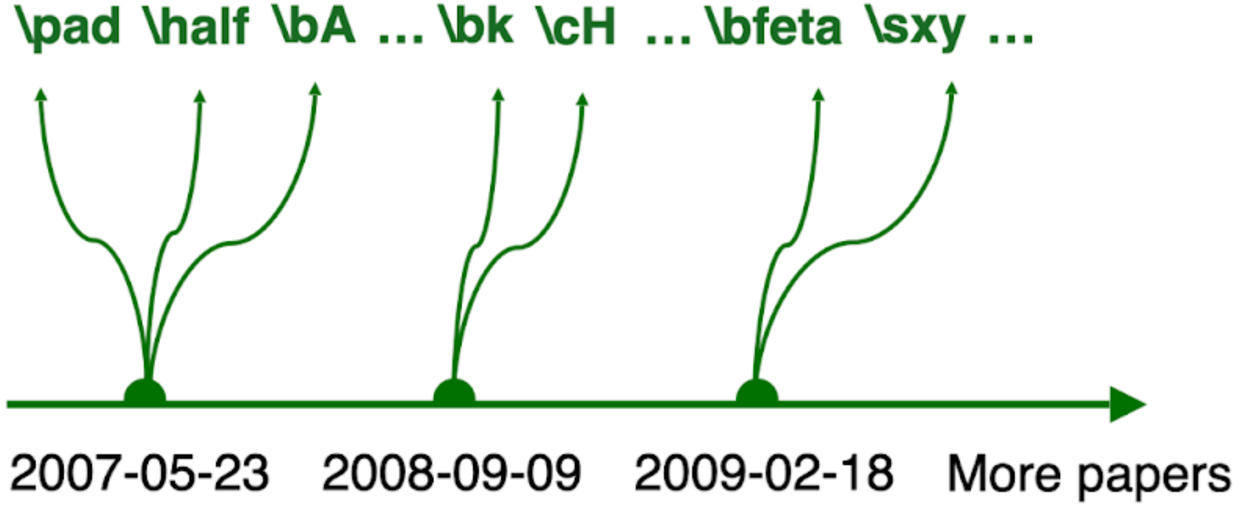

Author 1: Huber

a



Author 2: Lindner



Coauthored paper (2012-05-25) **b**

$$\mathcal{H} = -t \sum_{\langle \mathbf{r},\mathbf{r}' \rangle} \left[b^\dagger_{\mathbf{r}} b_{\mathbf{r}'} e^{iA_{\mathbf{r}\mathbf{r}'}} + b^\dagger_{\mathbf{r}} b_{\mathbf{r}'} e^{-iA_{\mathbf{r}\mathbf{r}'}} \right] + \frac{U}{2} \sum_{\mathbf{r}} b^\dagger_{\mathbf{r}} b_{\mathbf{r}} (b^\dagger_{\mathbf{r}} b_{\mathbf{r}} - 1) - \mu \sum_{\mathbf{r}} b^\dagger_{\mathbf{r}} b_{\mathbf{r}}, \qquad (5)$$

$$C^\dagger \mathcal{H}^{(0)}_{\mathrm{HC}}(q\mathbf{A}, \mu)\, C = \mathcal{H}^{(0)}_{\mathrm{HC}}(-q\mathbf{A}, -\mu). \qquad (17)$$

89 unique LaTex macros **c**

40 from Lindner, 8 from Huber

Author writing contributions

Linder: 5/6, Huber:1/6

Inferred writing contributions

1,159,572 papers; 954,397 authors
(1991 - 2024)

arXiv LaTex files

1.9 million papers; 1.7 million authors
(1991 - 2024)

Table 1. Validation of author contributions inferred from LaTeX macros using self-reported data.

Journal	Sample size N	Time period	Precision	Recall
PNAS	599	2006-2023	0.90	0.73
Nature	265	2010-2023	0.78	0.65
Science	48	2018-2023	0.89	0.59
Plos One	362	2007-2023	0.92	0.65
Total	1,274	2006-2023	0.88	0.69

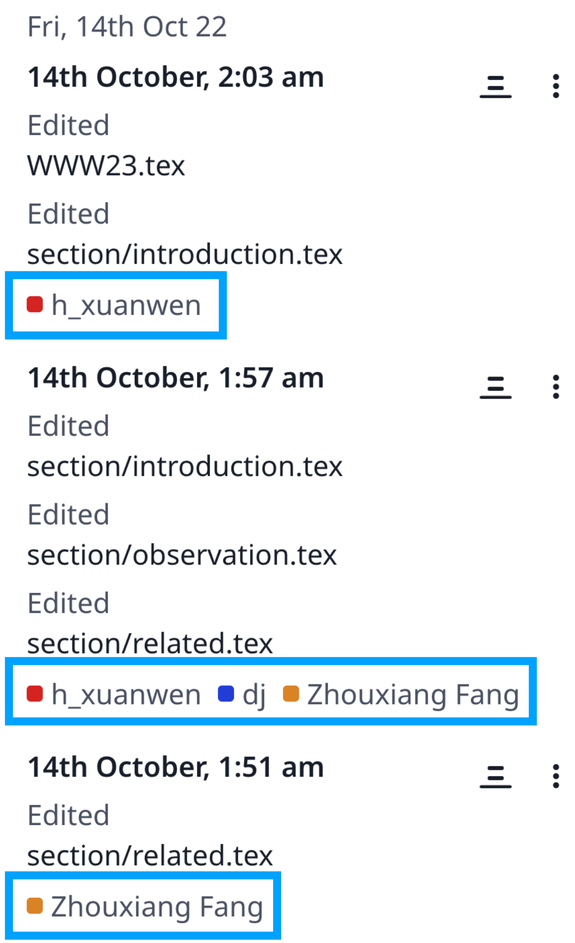
Observational contribution:
1/6 from Huber 5/6 from Lindner

Self-reported contribution statement:
"S.D.H. and N.H.L. designed research, performed research, and wrote the paper."

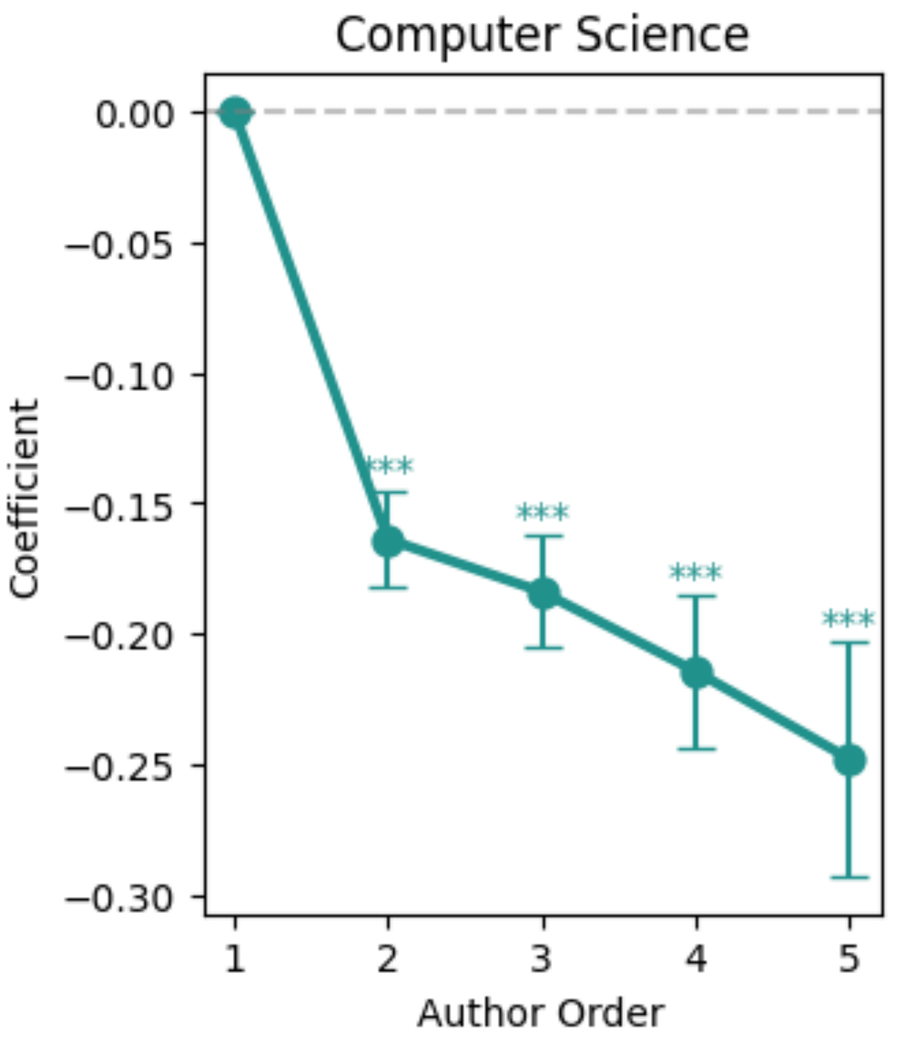
How to Generate Popular Post Headlines on Social Media?

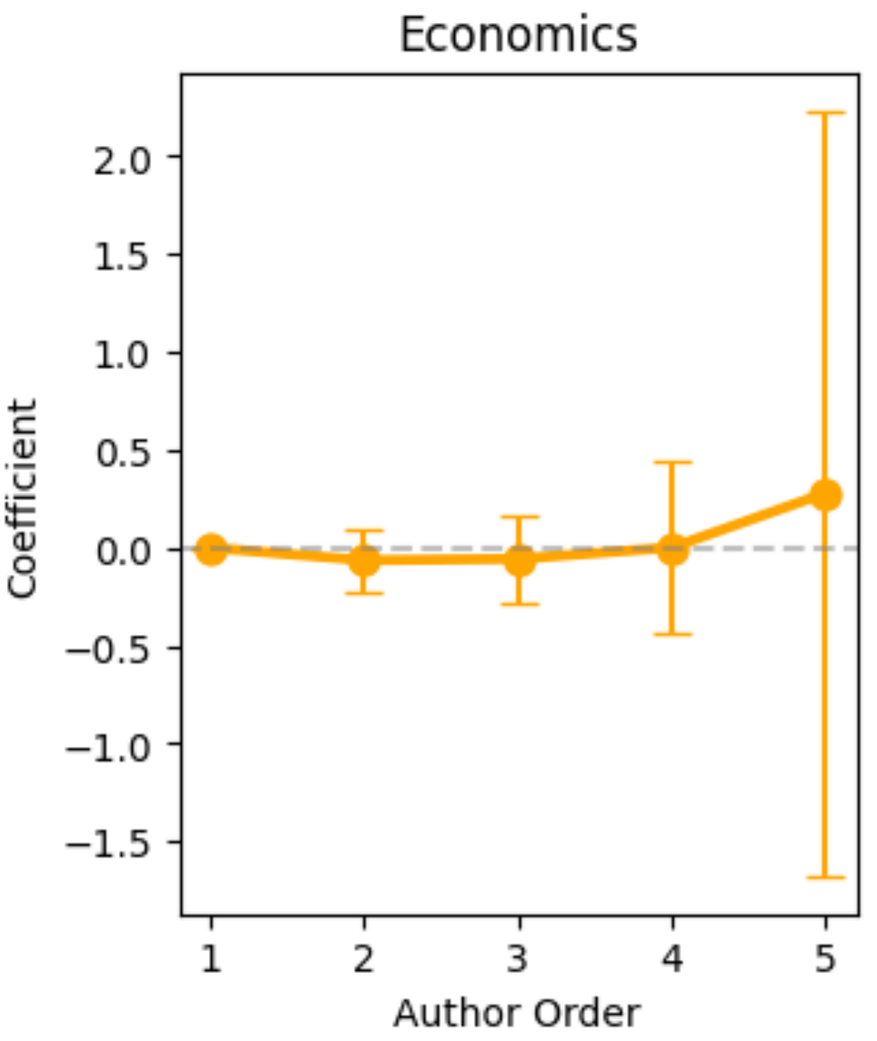
Zhouxiang Fang, Min Yu, Zhendong Fu, Boning Zhang, Xuanwen Huang, Xiaoqi Tang, Yang Yang

```
70 \usepackage{algorithm}
71 \usepackage{algpseudocode}
72 \usepackage{amsmath}
73 \renewcommand{\algorithmicrequire}{\textbf{Input:}}  % Use Input
   in the format of Algorithm
74 \renewcommand{\algorithmicensure}{\textbf{Output:}} % Use Output
   in the format of Algorithm
75
76
77 \captionsetup[subfigure]{aboveskip=2em,belowskip=-1em}
78 \captionsetup[table]{aboveskip=1em,belowskip=0em}
79 \captionsetup[figure]{aboveskip=1em,belowskip=-1em}
80 \newcommand{\yang}[1]{\textbf{\color{blue}[** #1 ** --yang]}}
81 \newcommand{\hxw}[1]{\textbf{\color{red}[** #1 ** --hxw]}}
82 \newcommand{\fzx}[1]{\textbf{\color{blue}[** #1 ** --fzx]}}
83 \newcommand{\fzd}[1]{\textbf{\color{magenta}[** #1 ** --fzd]}}
84 \newcommand{\vpara}[1]{\vspace{0.01in}\noindent\textbf{#1 }}
85 \newcommand{\figref}[1]{Fig.~\ref{#1}}
86 \newcommand{\eqnref}[1]{Eq.~(\ref{#1})}
87 \newcommand{\defref}[1]{Definition.~\ref{#1}}
88 \newcommand{\secref}[1]{Sec.~\ref{#1}}
89 \newcommand{\tableref}[1]{Table~\ref{#1}}
90 \newcommand{\algref}[1]{Algorithm~\ref{#1}}
91 \newtheorem{definition}{Definition}
```

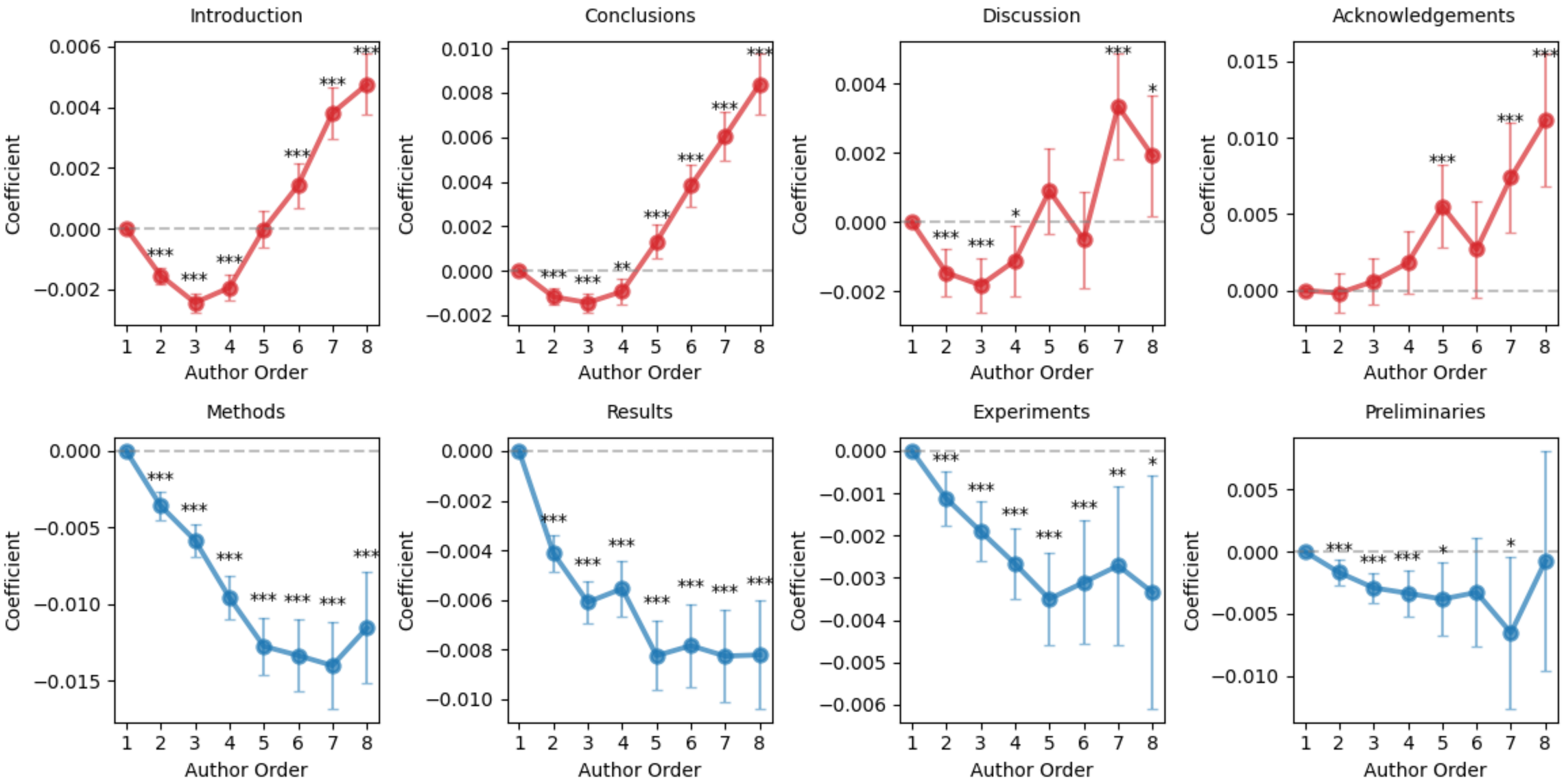


Moderate positive correlation with editing logs: Pearson r = 0.50, p = 0.07


Computer Science
Coefficient
0.00
−0.05
−0.10
−0.15
−0.20
−0.25
−0.30
***
***
***
***
1
2
3
4
5
Author Order

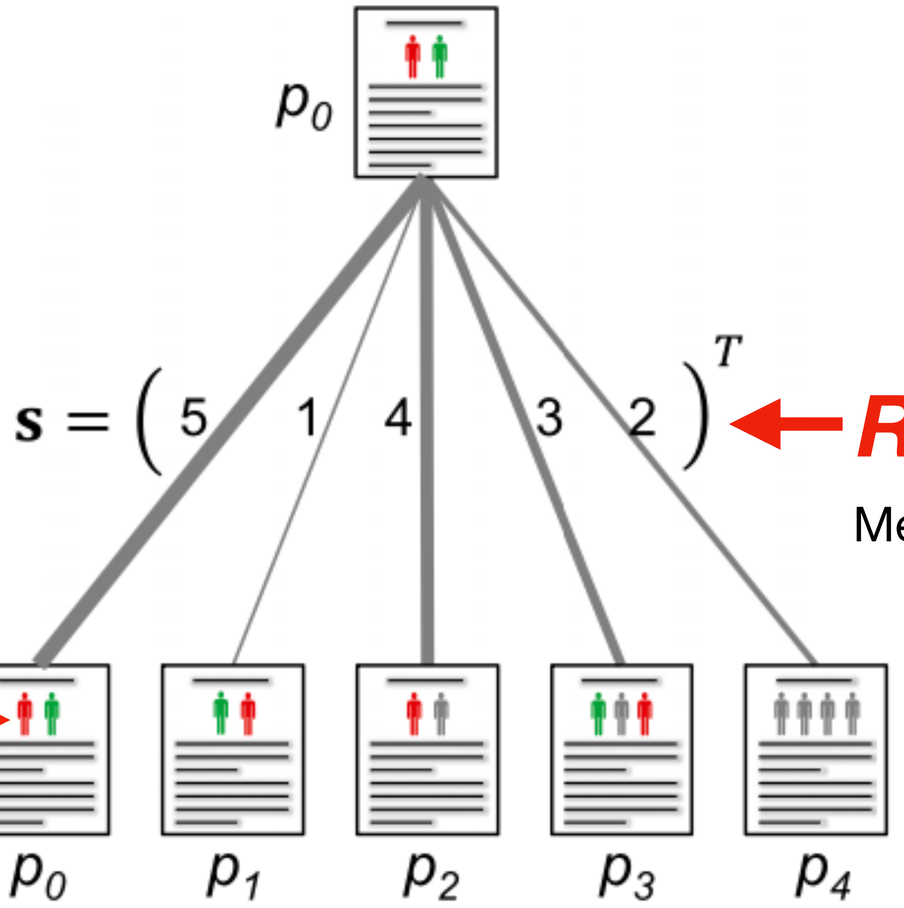

Economics
Coefficient
2.0
1.5
1.0
0.5
0.0
−0.5
−1.0
−1.5
1
2
3
4
5
Author Order

Conceptual work



Technical work

Credit Allocation Algorithm (Shen & Barabási, 2014)



Relevance

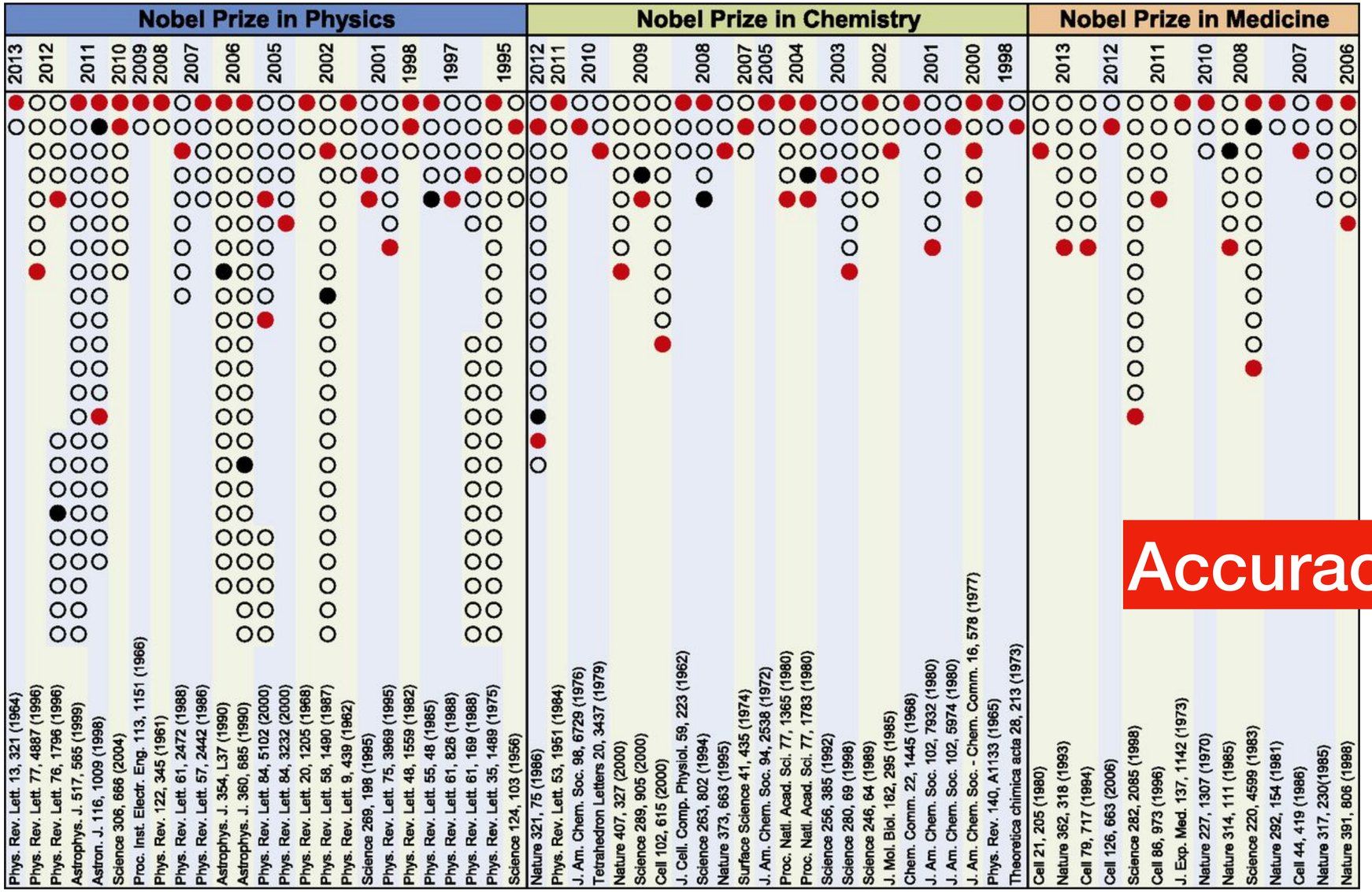
Measured by cocitation frequency

Share

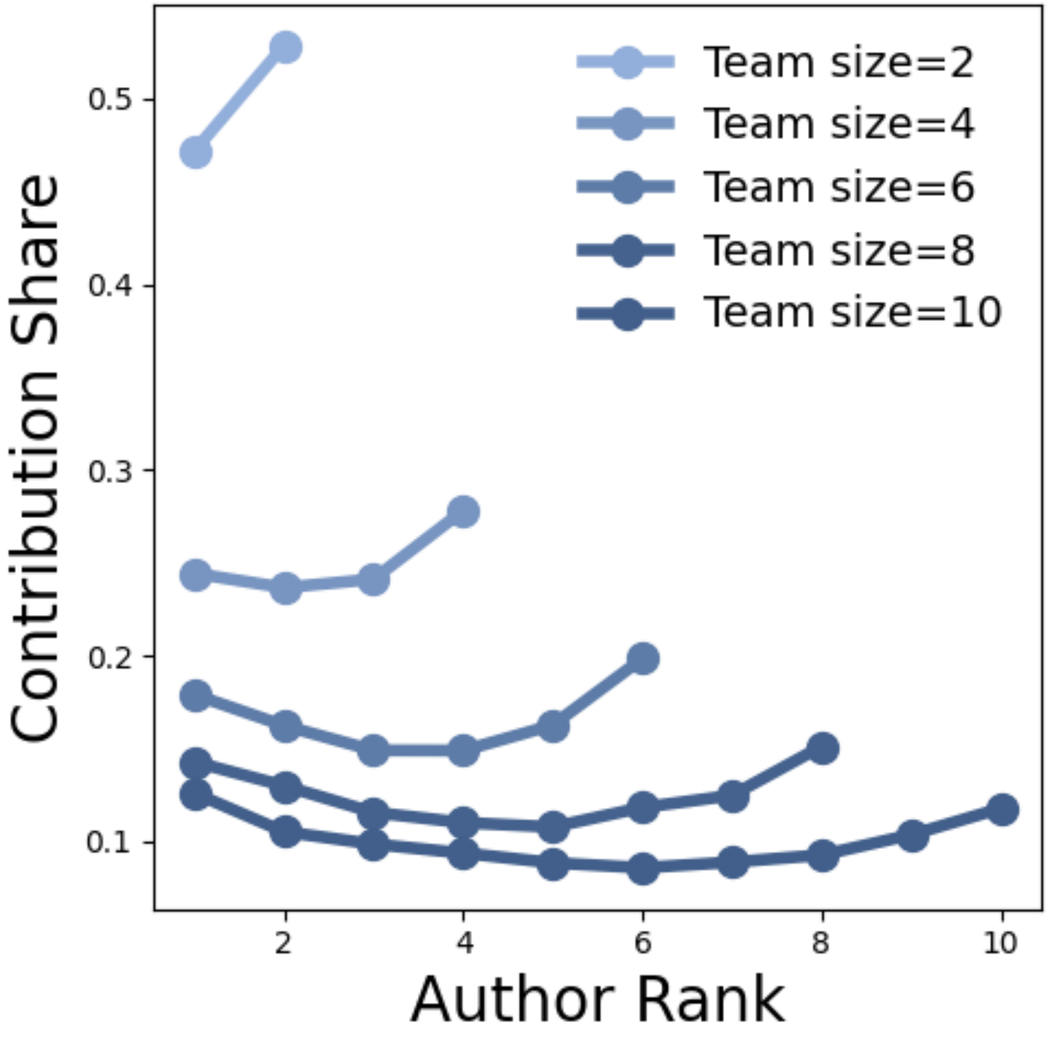
Measured by 1/team size

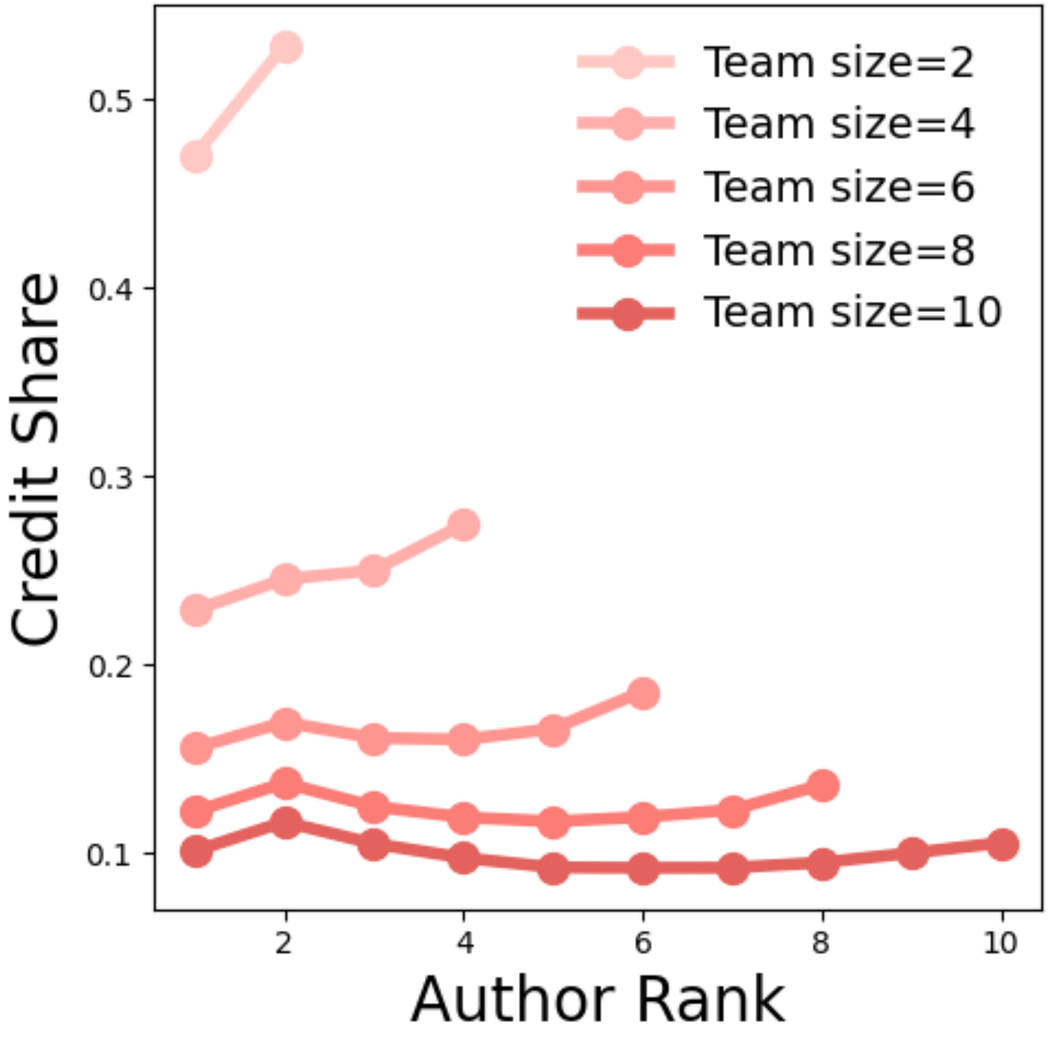
Productivity

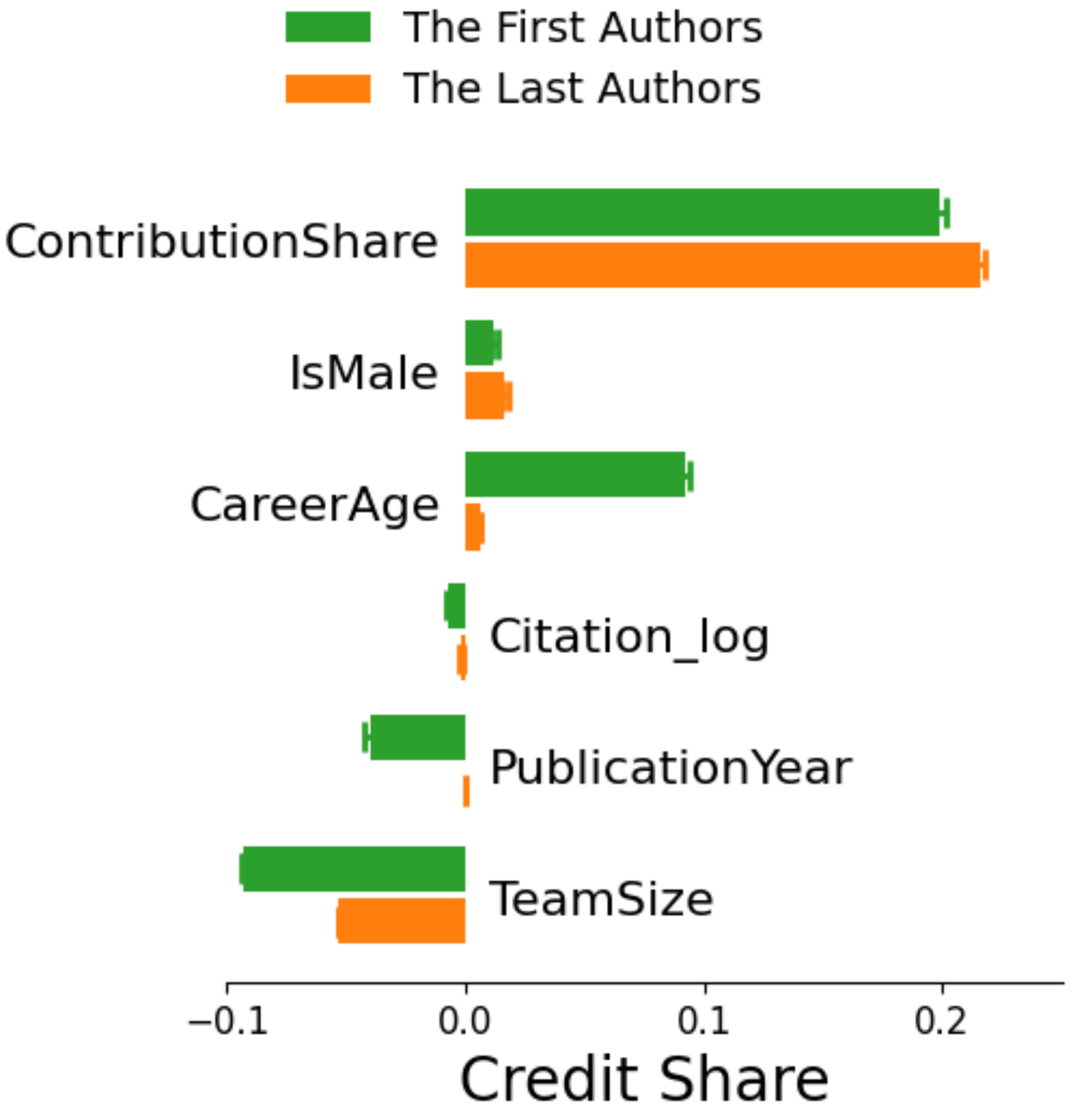
Credit Allocation Algorithm (Shen & Barabási, 2014)

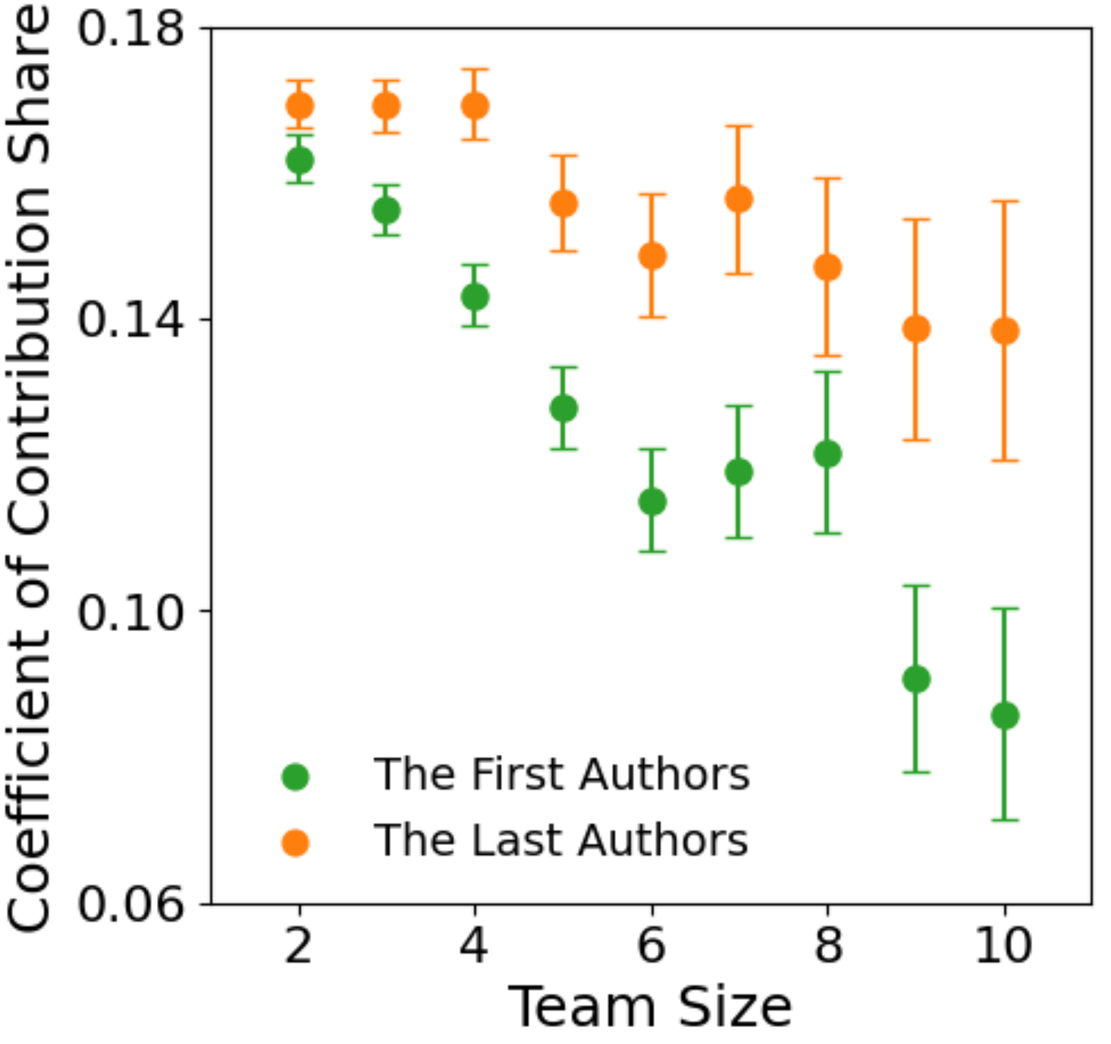


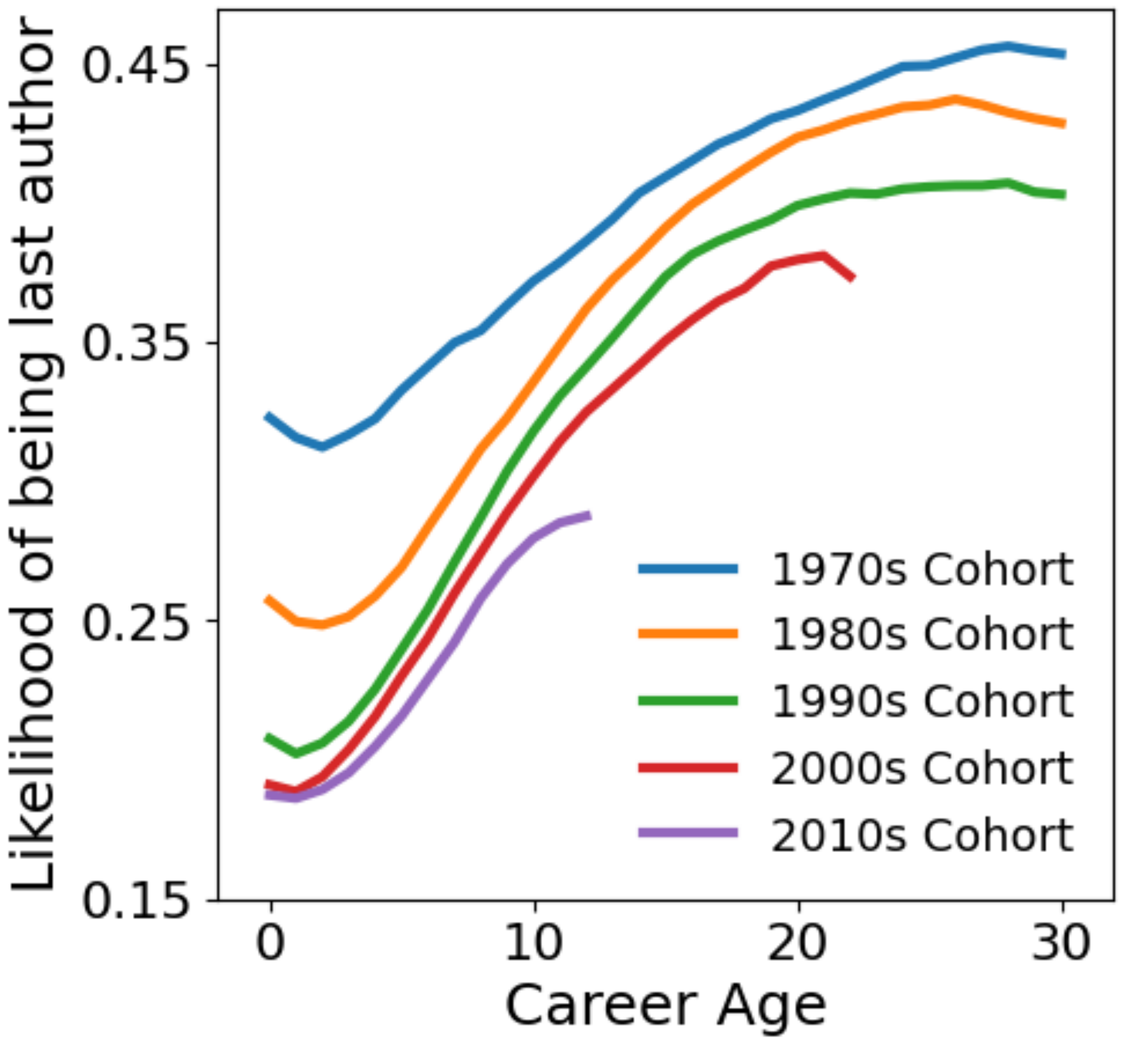
Accuracy 81%


Contribution Share
0.5
0.4
0.3
0.2
0.1
2
4
6
8
10
Author Rank
Team size=2
Team size=4
Team size=6
Team size=8
Team size=10


Credit Share
0.5
0.4
0.3
0.2
0.1
2
4
6
8
10
Author Rank
Team size=2
Team size=4
Team size=6
Team size=8
Team size=10


The First Authors
The Last Authors
ContributionShare
IsMale
CareerAge
Citation_log
PublicationYear
TeamSize
−0.1
0.0
0.1
0.2
Credit Share


Coefficient of Contribution Share
0.18
0.14
0.10
0.06
2
4
6
8
10
Team Size
The First Authors
The Last Authors


Likelihood of being last author
0.45
0.35
0.25
0.15
0
10
20
30
Career Age
1970s Cohort
1980s Cohort
1990s Cohort
2000s Cohort
2010s Cohort

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Thank you!