

2023中国国际科研合作 现状报告

—— 基于文献计量分析的视角

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05

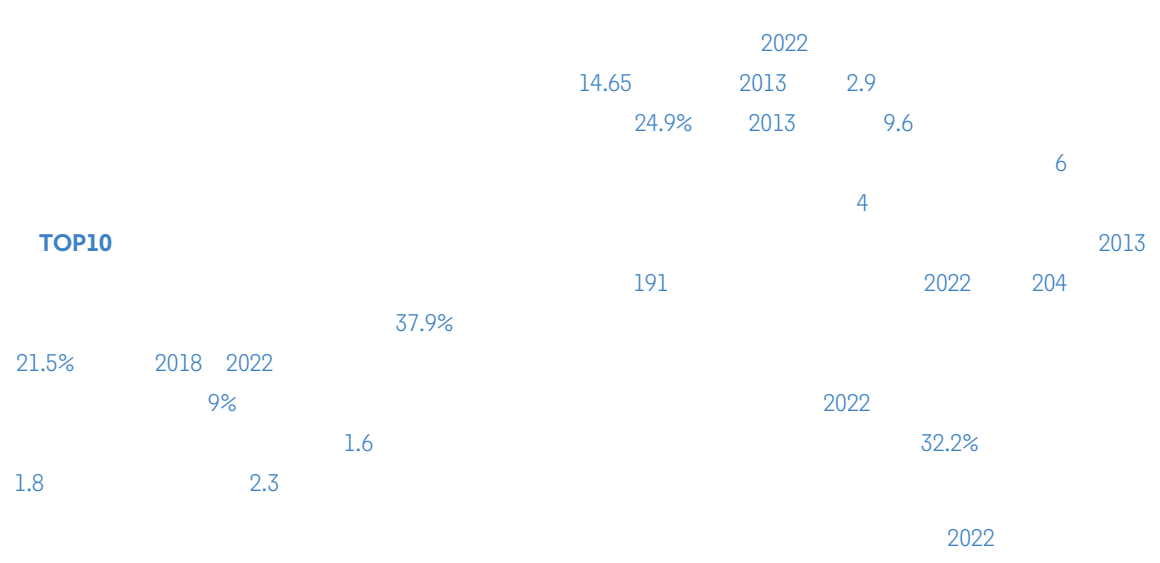
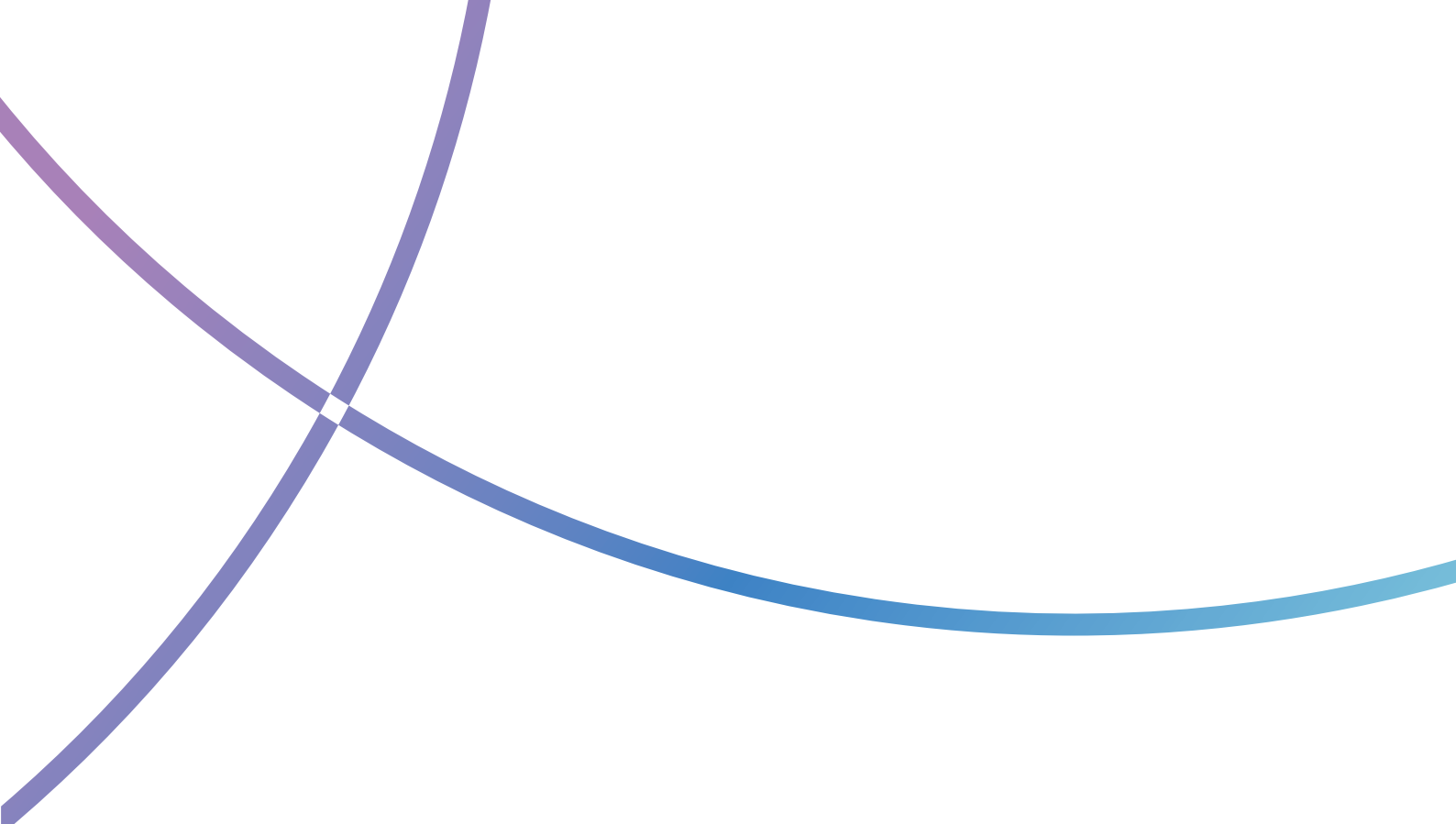
5.1		34
5.2		35
5.3		38
5.4	" "	39
5.5		41
5.6		42
5.7		44

0

6.1		48
6.2		49
6.3	TOP5	52
6.4	TOP5	52

0

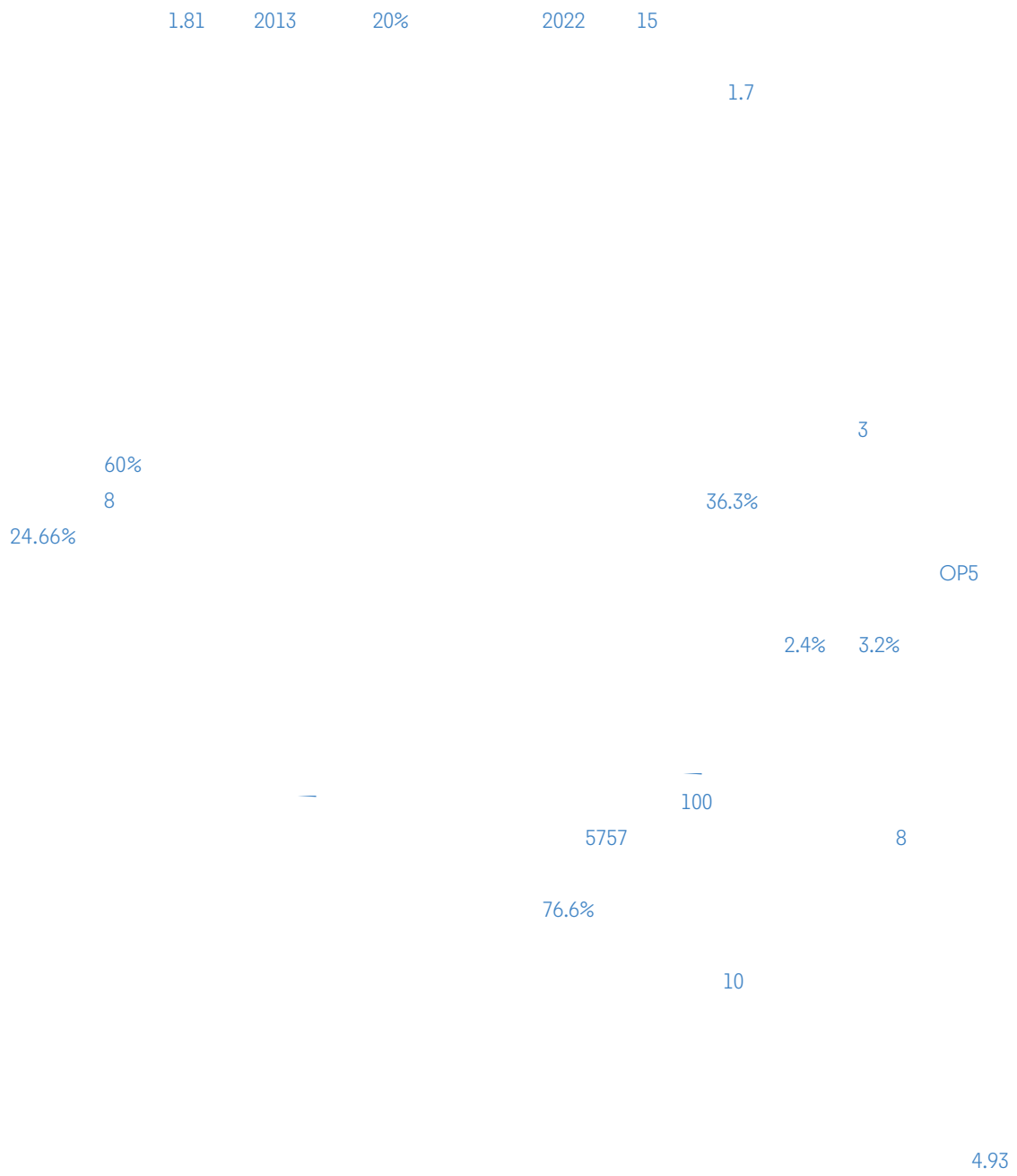
7.1		56
7.2		57
7.3		58

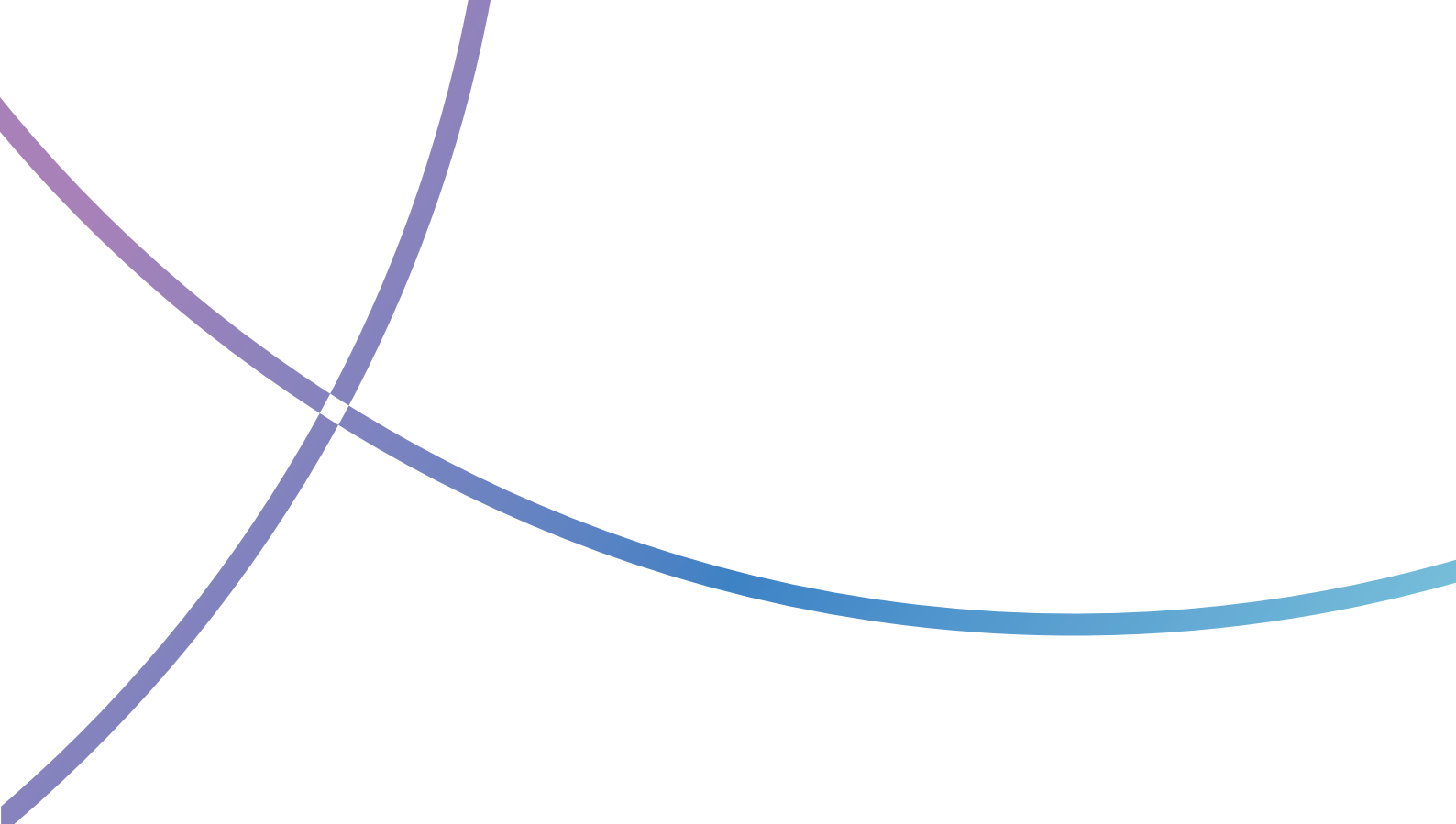


路”国家

与共建“一带一

2013 2017 7 2018





2017

2035

2023

2013

2022

01 _____

1

$$\frac{A}{B}$$

26

2023 5

$$\frac{A}{H}$$

$$\frac{G}{N}$$

$$\frac{G}{M}$$

3

$$CNCI = \frac{C}{reference}$$

reference

4

$$PAI_j = \frac{P_j / P_{wj}}{P / P_w}$$

1

2

3

4

1. E I

2. C I E (C I), A & H C I (AHC I)

3. 2017

4. - 2001-2010 - 2014

P_{wj} -

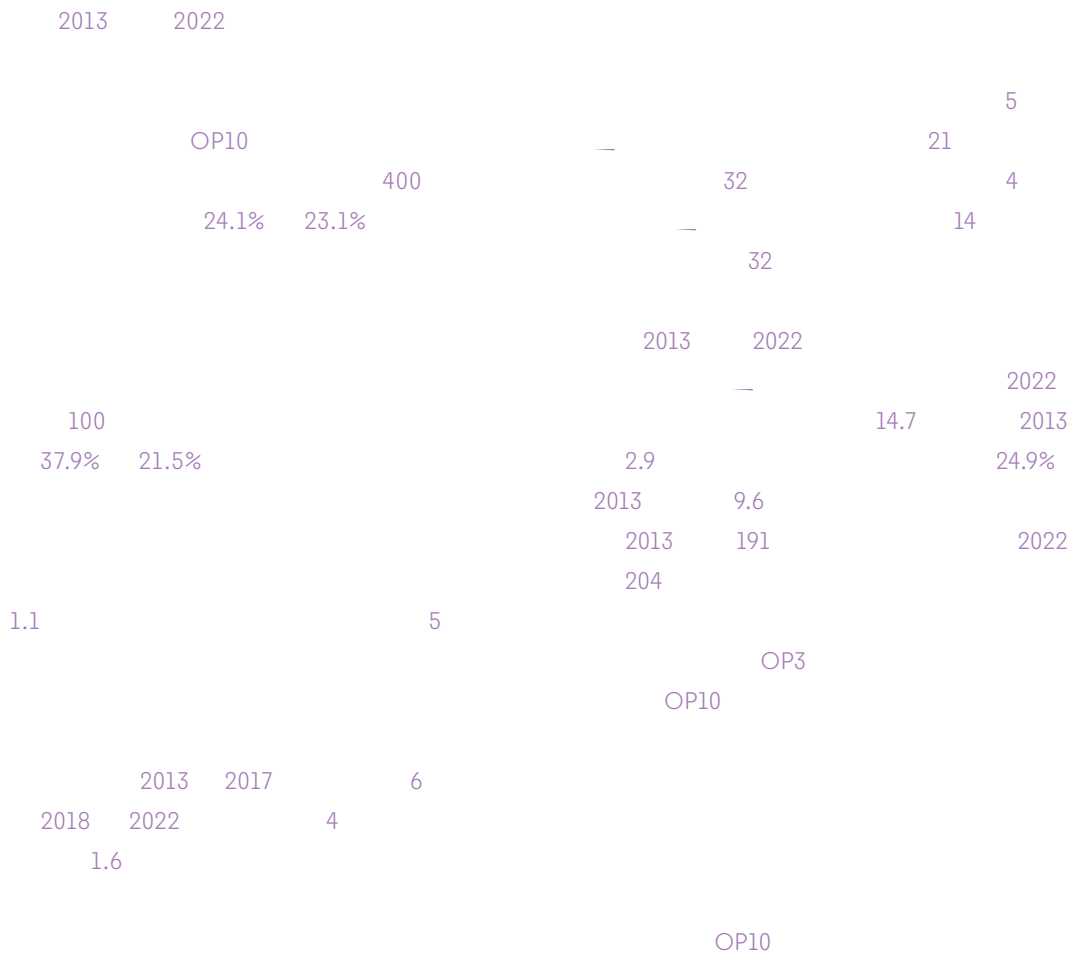
P -

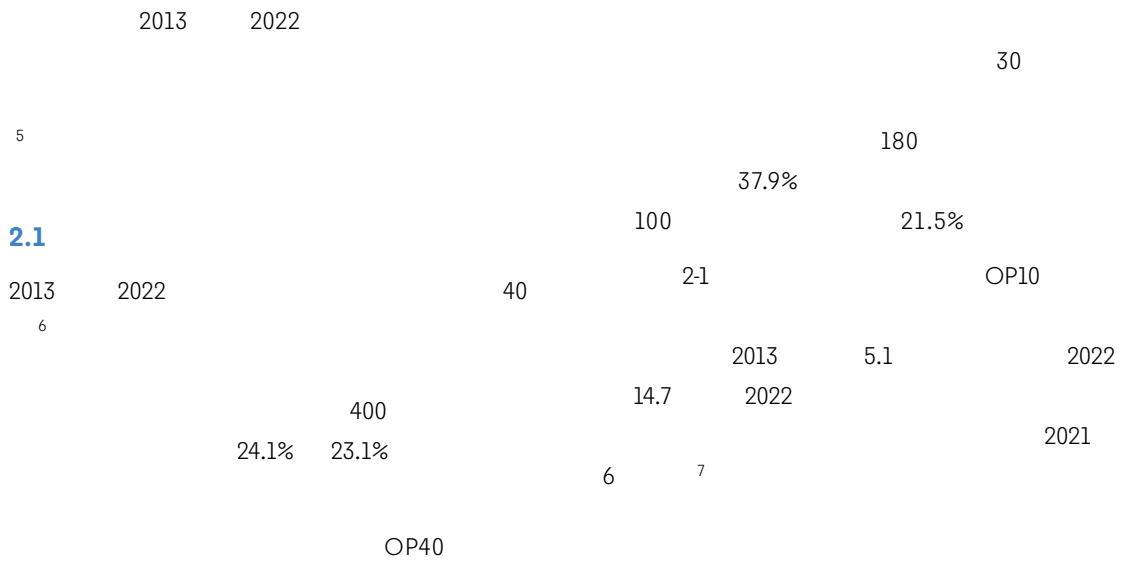
P_w -

$PAI > 1$

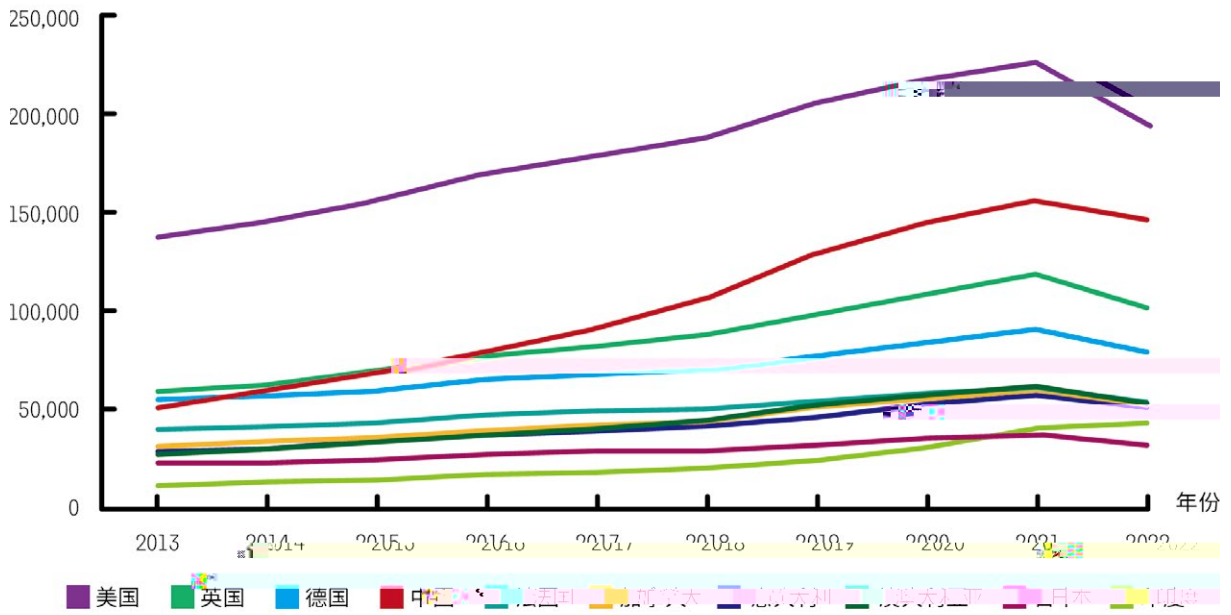


02





国际合作论文数(篇)



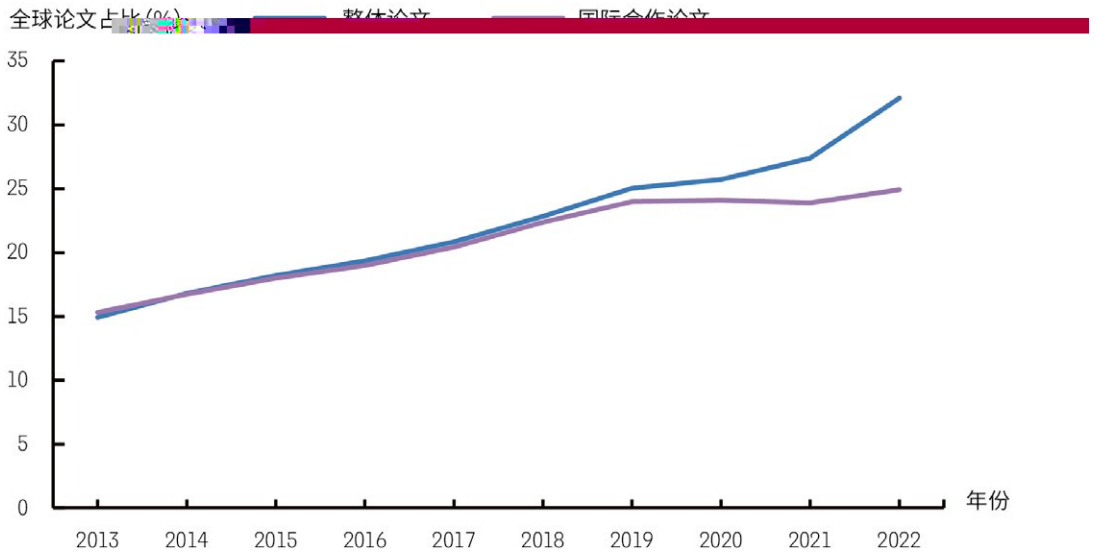
2-1



5. 10

6. OP40 95.4% 99.1%

7. 2021 653,007 2022 588,129



2-2

2.2

2013 2022
OP30 OP15 5

2-1

2-1 OP30

年份	整体论文 (%)	国际合作论文 (%)
2013	11.5	2.7
2014	7.4	2.4
2015	6.4	2.2
2016	5.1	2.2
2017	4.5	2.0
2018	4.3	1.9
2019	4.0	1.8
2020	3.4	1.7
2021	3.1	1.7
2022	3.0	1.7

2-2 2013 2017 2018 2022

OP15

7 3% 9%
5
6 4
1.6 39% 15
— 7

2-2 OP15

	2013 — 2017	2018 — 2022		%
	12.2	11.1	-1.1	-9.0
	7.3	7.5	0.2	2.7
	6.5	6.3	-0.2	-3.1
	4.1	5.7	1.6	39.0
	4.7	4.4	-0.3	-6.4
	4.2	4.4	0.2	4.8
	3.9	4.0	0.1	2.6
	3.2	3.6	0.4	12.5
	3.1	3.1	0.0	0.0
	2.9	3.1	0.2	6.9
	2.7	2.7	0.0	0.0
	2.4	2.4	0.0	0.0
	2.3	2.2	-0.1	-4.3
	1.8	2.3	0.5	27.8
	2.0	2.0	0.0	0.0

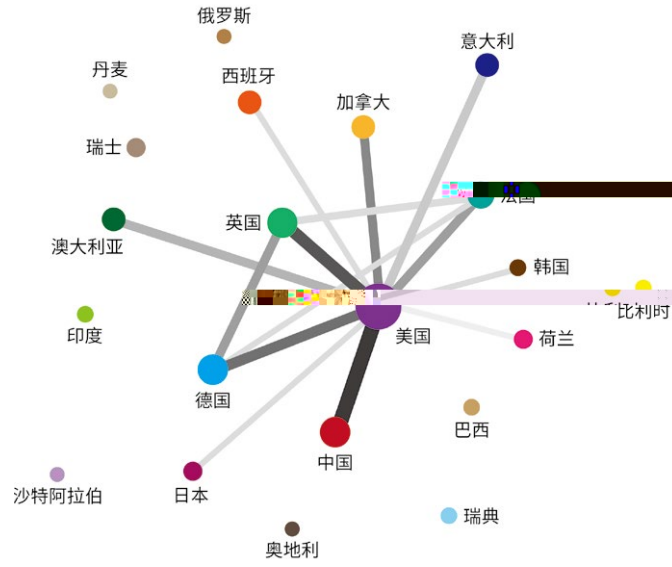
2.3

2-3 2-4 2013 2017 2018
2022 5

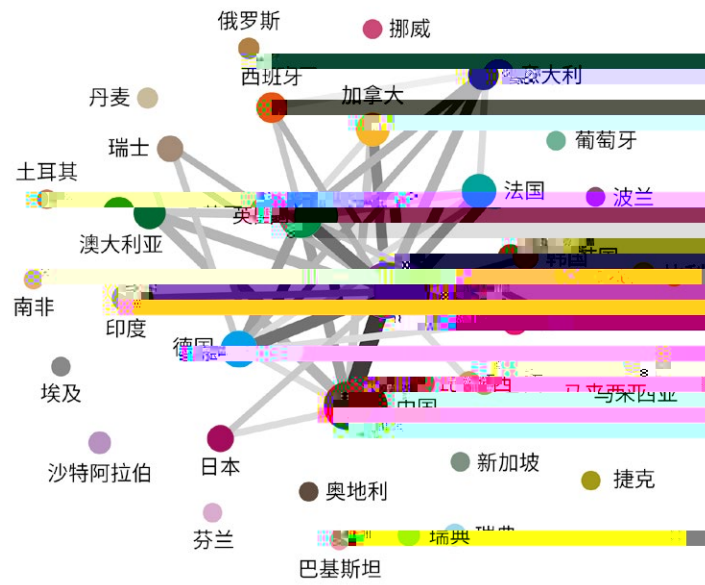
8

— 21

32 — 14 32
 2013 2017 191 2018 2022
 204



2-3 2013 2017



2-4 2018 2022

2.4

2013 2017 2018 2022 2022 26

1

1

16

2018

2-3

2-3

10

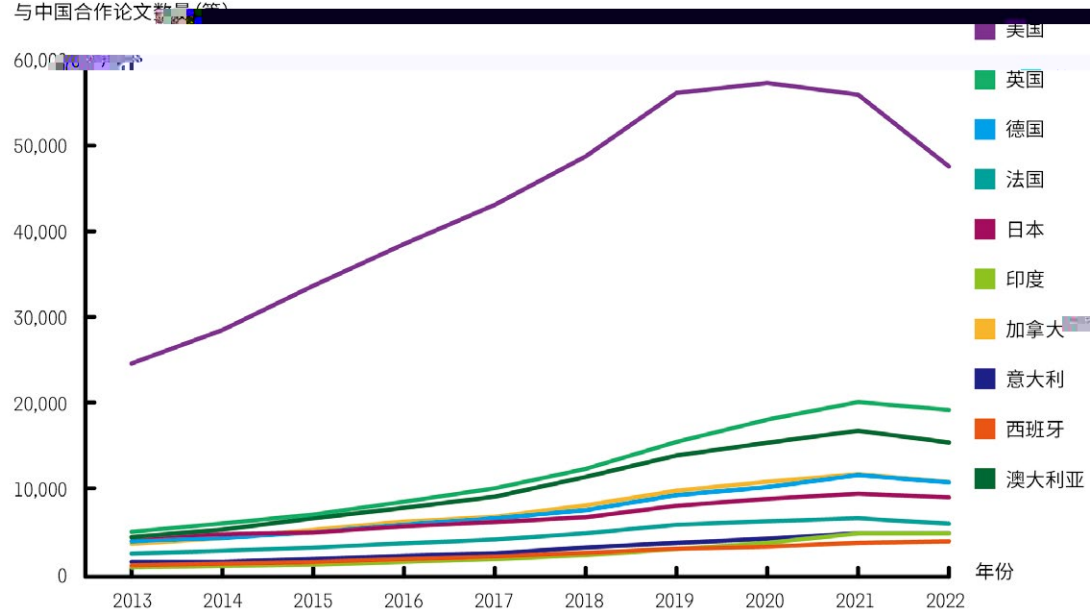
	2013 — 2017		2018 — 2022		
	167434	1	263615	1	1.6
	36484	2	84491	2	2.3
	33028	3	72322	3	2.2
	26024	4	50761	4	2.0
	25493	5	48989	5	1.9
	25484	6	41701	6	1.6
	15839	7	28965	7	1.8
	9174	8	20203	8	2.2
	6114	10	18754	9	3.1
	7711	9	16256	10	2.1

2-5 2-6 OP10 2022 47.7% 2013 32.2%

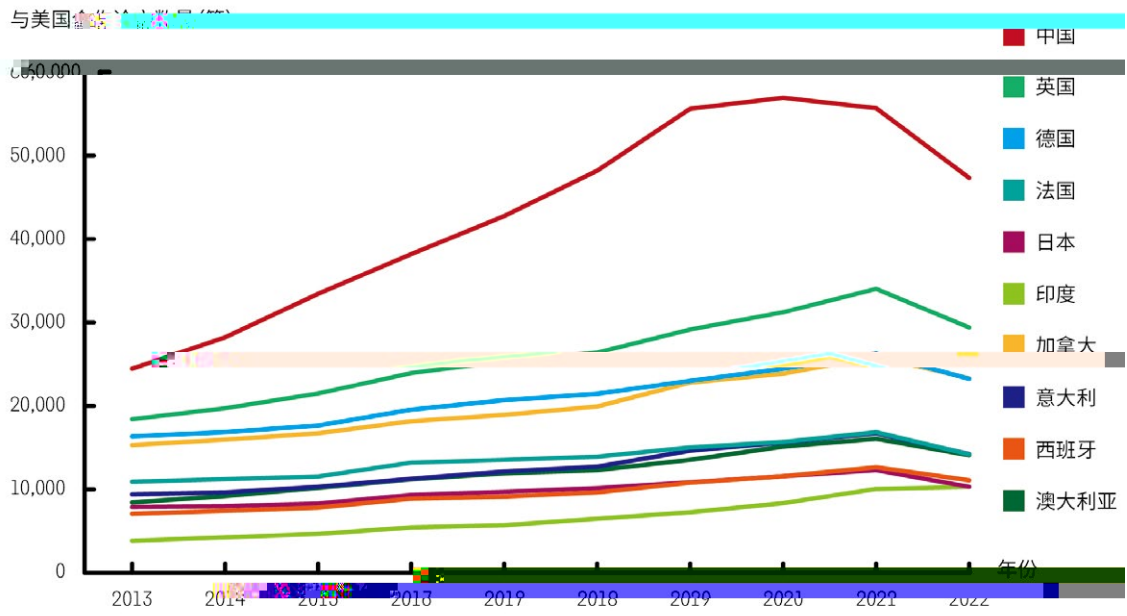
10 2020 2013 17.8% 2019 27.1%
2022 24.2%

2-7 2-8

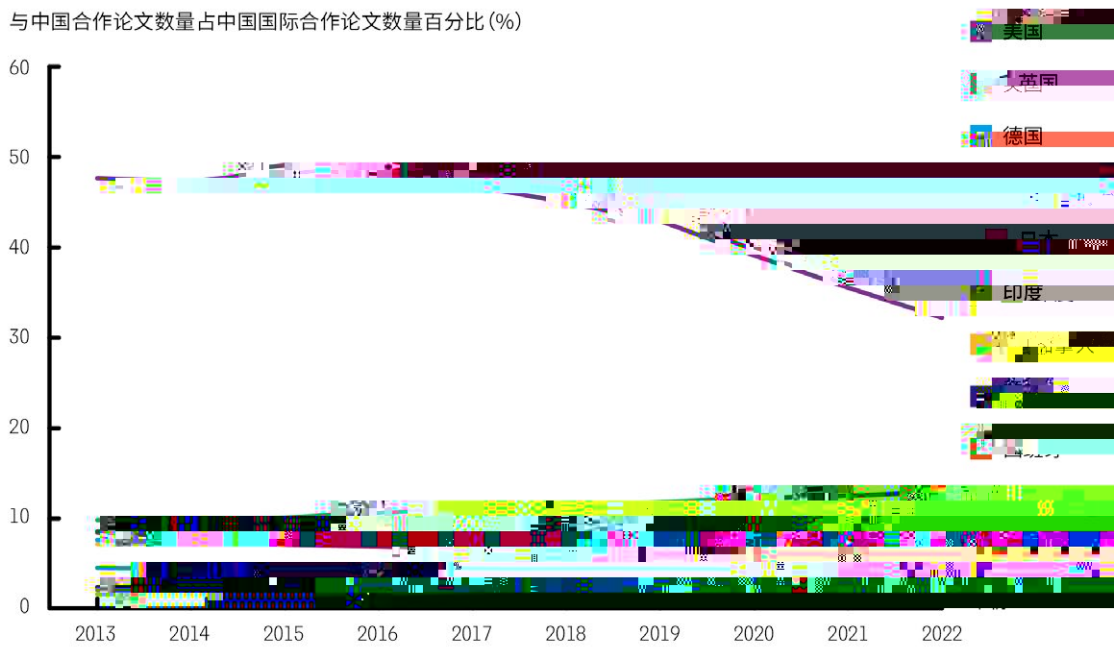
与中国合作论文数量(篇)



2-5

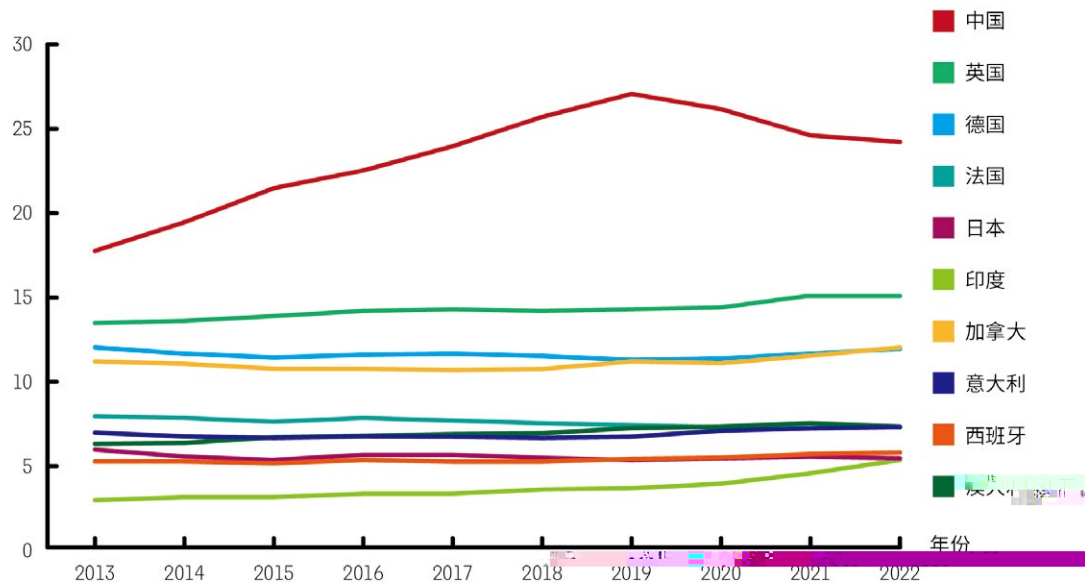


2-6



2-7

与美国合作论文数量占美国国际合作论文数量百分比(%)



2-8

2.5

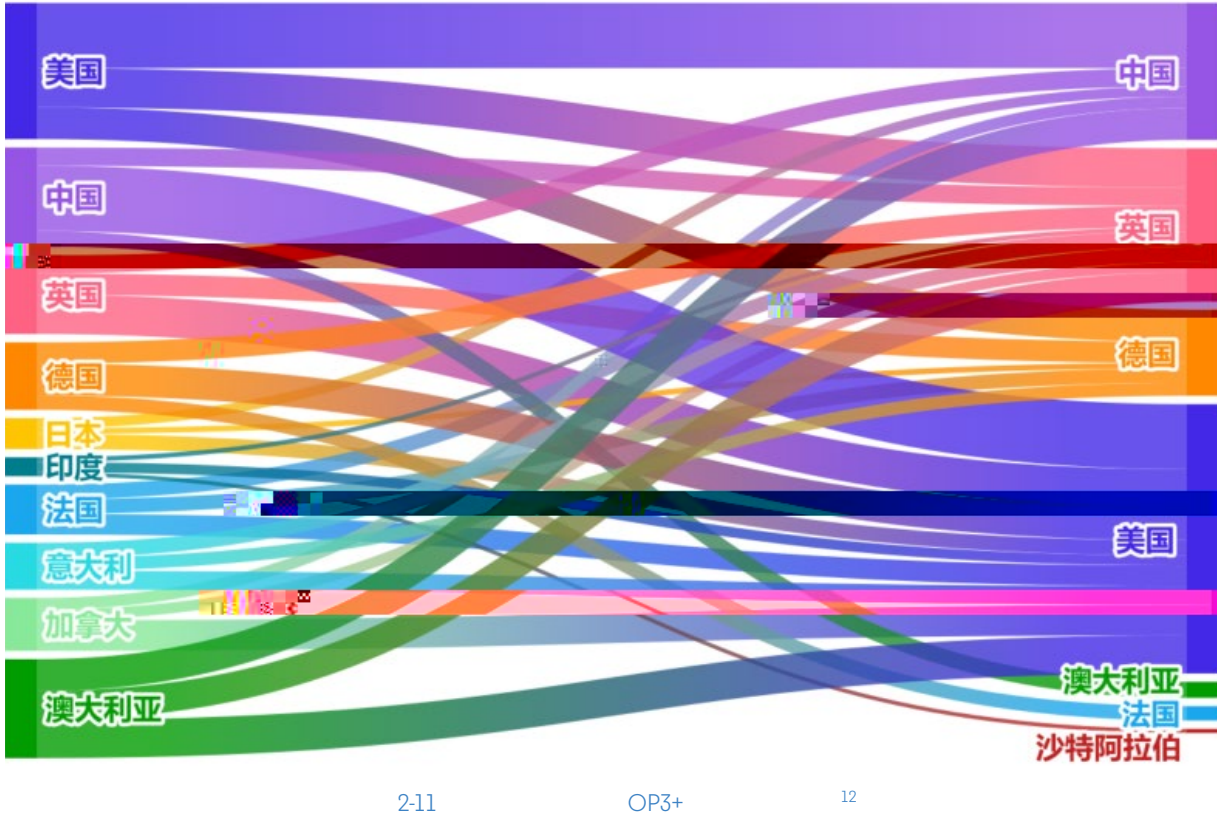
2-9

2-10



2.6

2-11 2-4 OP10 2-4
8 9 OP3 5 OP3
OP3



2.7

2022

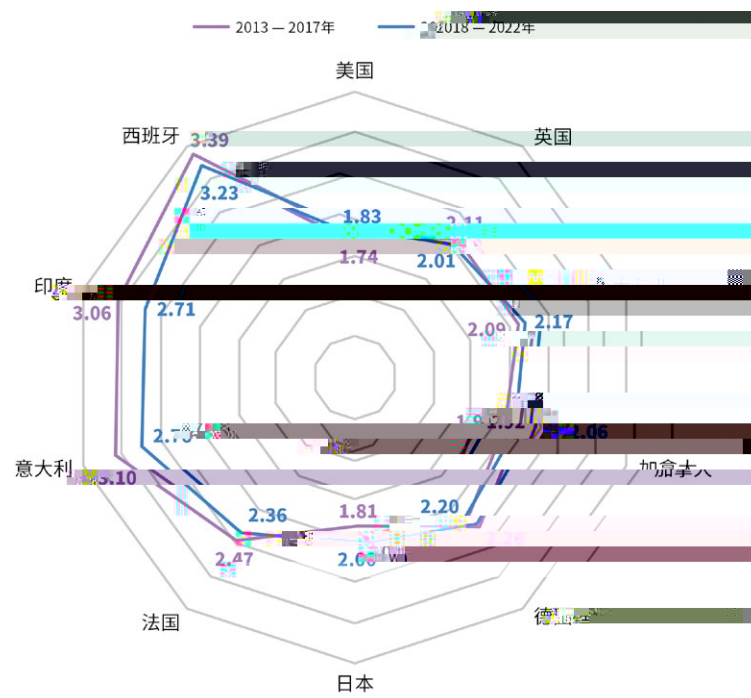
1.81

1.0

2-12

2-12

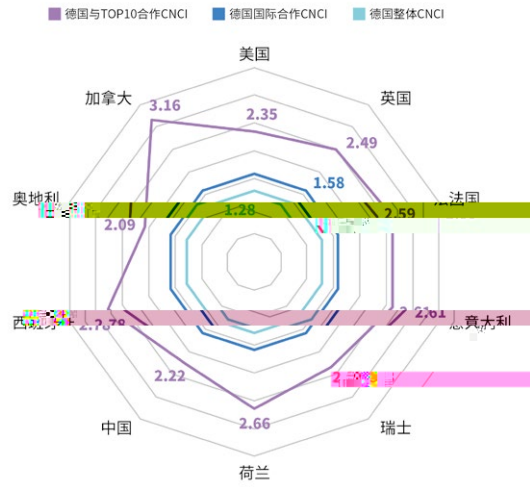
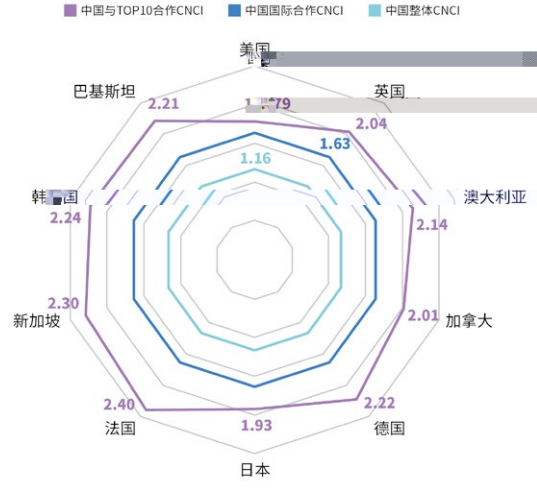
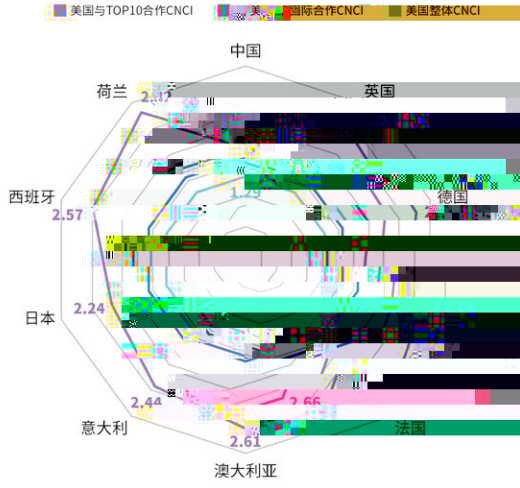
2-13

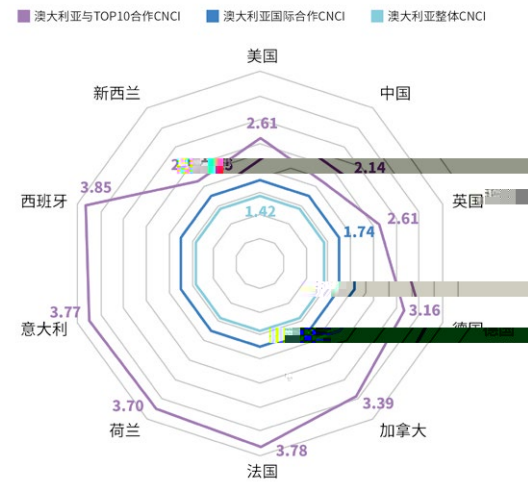
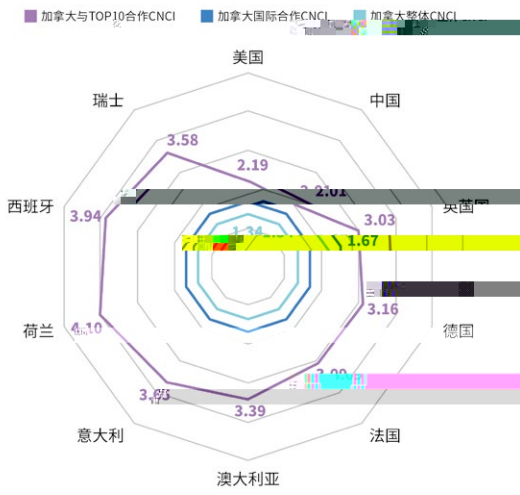
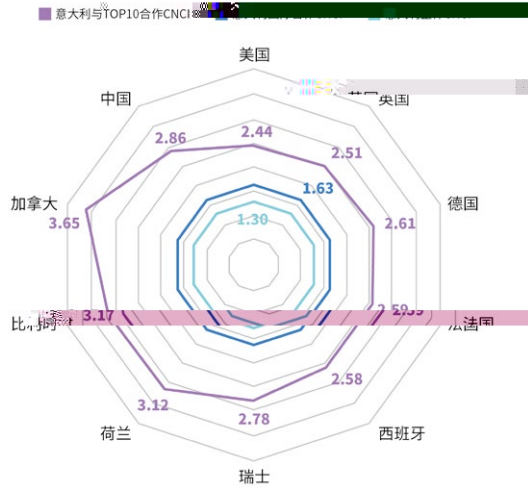
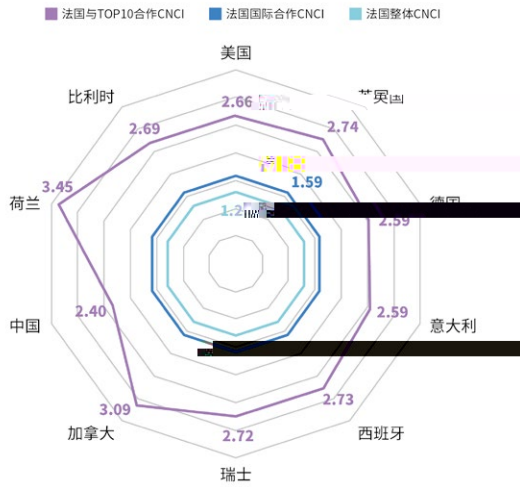
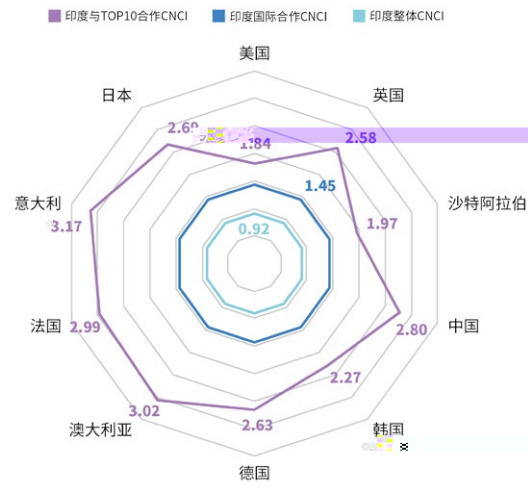
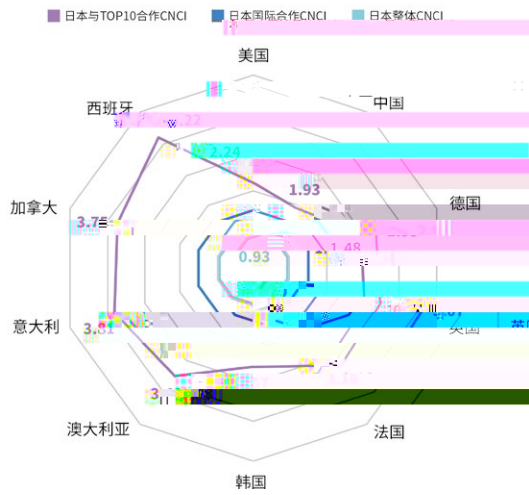


2-13

2-14

OP10



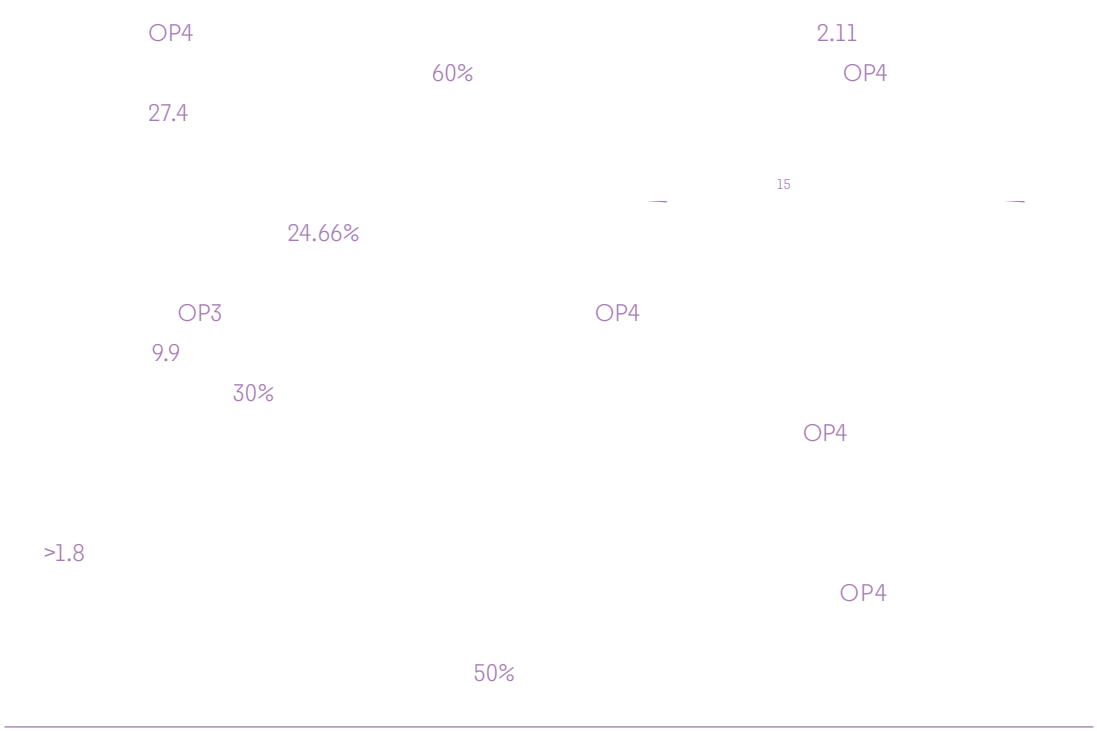


2-15

5C

1.0%

03



1/4

/

13

12%

3.1**3.1.1**

2013 2022

27

24.66%

3-1

3-1

OP20

		%	% ¹⁶
	274259	28.40	26.49
	146363	26.13	14.14
	139227	29.12	13.45
	131679	28.64	12.72
	83499	26.62	8.07
	82422	27.68	7.96
	62968	20.89	6.08
	57996	23.53	5.60
	43906	23.21	4.24
	41714	21.24	4.03
	39585	23.72	3.82
	39433	24.54	3.81
	36469	28.17	3.52
	35444	21.46	3.42
	29005	22.61	2.80
	28783	18.72	2.78
	28313	21.04	2.73
	24827	20.62	2.40
	16721	25.79	1.62
	16182	20.61	1.56

3-2 2013 2022 1.80 1.80

1.89 1.87 1.83 1.90 1.81 50%

3-2

OP20

			%
	1.90	1.30	46.15
	1.89	1.40	35.47
	1.87	1.36	37.22
	1.83	1.27	43.99
	1.81	1.27	42.37
	1.80	1.28	40.23
	1.80	1.17	53.69
	1.78	1.25	42.16
	1.77	1.28	38.62
	1.77	1.26	41.03
	1.76	1.30	34.74
	1.76	1.18	49.40
	1.75	1.15	51.39
	1.72	1.17	46.86
	1.72	1.18	45.25
	1.69	1.13	49.33
	1.66	1.15	44.18
	1.65	1.16	43.15
	1.65	1.16	41.77
	1.61	1.13	43.17

3.1.2

2013 2022 10 30% 3-3

10%

2.11

3-3

		%	%
	99077	27.93	57
	78330	28.31	7.57
	77844	26.65	7.52
	59400	27.53	5.74
	58430	23.82	5.64
	52204	24.76	5.04
	44204	32.52	4.2
	28981	23.22	2
	26334	21.57	2
	23698	20.73	2
	22574	20.44	2
	20234	23.09	1.9
	19876	20.54	1.9
	18792	31.98	1.82
	10484	25.04	1.01

3.2

/

8

3-4

15

OP4

11

1

4

3-4

OP4

17

1	2	3	4	5	6	7	8	9	0
1	2	3	5	4	6	8	11	12	9

17.

10

6

7

8

11

[Color gradient bar]									
1	2	3	4	6		7	0	1	9
1	3	2	4	5		8	0	9	11
1			2						

OP4

3-5

3-5

OP4

[Color gradient bar]	[Color gradient bar]	[Color gradient bar]	[Color gradient bar]	[Color gradient bar]	[Color gradient bar]	“	”
.i'i				0	0	0	
[D...<				0	0	0	
&s]s				0	0	0	
C>&Ž				0	0	0	

15

3-6

3-6 OP4

[Color gradient bar]	[Color gradient bar]	[Color gradient bar]	[Color gradient bar]	[Color gradient bar]	[Color gradient bar]	“	”
			0	0	0		
			0	0	0		
			0	0	0		
			0	0	0		

OP4

3

2 3

2 3

2

3-7

3-7

OP4

18



1	2	3	4	5	6	7	8	9	
1	4	5	2	3	6	8	7	11	
1	0	5	3	4	9	2	8	15	
1	8	5	3	4	6	2	7	11	

1

2

15
10

3.3

2013 2022

	TOP 10									
(274269)	C>&Ž (25468)	[Đ...< (22740)	&s]s (21900)	^é.ì (14137)	?Ě&Ž (13198)	]D[Đ (12546)	5 B› (9543)	> Eé (8501)	8Ô\ø (7729)	•(> (7580)
(146364)	.ìi (22740)	&s]s (14165)	C>&Ž (11473)	]D[Đ (8223)	?Ě&Ž (7289)	> Eé (6606)	^é.ì (6193)	5 B› (4388)	^é/B (3679)	\N/B (3477)
(139227)	.ìi (21900)	[Đ...< (14165)	C>&Ž (11480)	]D[Đ (8738)	?Ě&Ž (6148)	^é.ì (5885)	> Eé (5227)	5 B› (4249)	^é/B (3384)	•(> (3034)
(131717)	.ìi (25468)	&s]s (11480)	[Đ...< (11473)	^é.ì (8021)	]D[Đ (7674)	?Ě&Ž (6298)	^é/B (5225)	5 B› (5145)	> Eé (4627)	r.DŠ (3688)
(83499)	.ìi (12546)	&s]s (8738)	[Đ...< (8223)	C>&Ž (7674)	^é.ì (4108)	?Ě&Ž (3554)	5 B› (3162)	^é/B (2952)	•(> (2570)	> Eé (2383)
(82422)	.ìi (14137)	C>&Ž (8021)	[Đ...< (6193)	&s]s (5885)	]D[Đ (4108)	?Ě&Ž (3422)	^é/B (3222)	5 B› (3019)	\N/B (2652)	> Eé (2572)
(62968)	.ìi (13198)	[Đ...< (7289)	C>&Ž (6298)	&s]s (6148)	]D[Đ (3554)	^é.ì (3422)	> Eé (2785)	8Ô\ø (2550)	5 B› (2286)	•(> (2154)
(57996)	.ìi (9543)	C>&Ž (5145)	[Đ...< (4388)	&s]s (4249)	]D[Đ (3162)	^é.ì (3019)	i~C§ (2779)	?Ě&Ž (2286)	> Eé (2137)	^é/B (2013)
(43906)	.ìi (6536)	C>&Ž (5225)	[Đ...< (3679)	&s]s (3384)	^é.ì (3222)	]D[Đ (2952)	5 B› (2013)	?Ě&Ž (1726)	\N/B (1647)	8Ô\ø (1359)
(41716)	.ìi (7580)	C>&Ž (3569)	[Đ...< (3045)	&s]s (3034)	]D[Đ (2570)	?Ě&Ž (2154)	^é.ì (1883)	5 B› (1695)	8Ô\ø (1590)	> Eé (1530)

04 _____

4.1

OP20

3

OP20

OP20

35%

>4.0%

			%	%
☺	14666	8	52.49	3.67
☹	13514	8	62.85	4.63

4.2

4-3 OP20 30%

9

4-3 OP20

			%	%
\•5B5B>{s0=ÖpGtU&¥Eñ	\•5B		M	M
~`5B•J_BŸËJ>?@s0pGR¼S,	~`5B		M	M
P . 5x5Bu(8Ð=Ö	P . 5x		M	M
1•(q8Ð=Ö	~`5B		M	M
/B\Öi B`8Ð=Ö	P . 5x		M	M
(!Oš8Ð=Ö	...%•5B		M	M
ˆ: ºZ,+•ë0V(	Eþ5B		M	M
Eþ5BºiQ\=Ö(	Eþ5B		M	M
) ~ P s0=Ö©	) ~ P		M	M
>™YÁTO8Ð=Ö	~`5B		M	M
G*?r8Ð=Ö	aL8Ð-D'G		M	M
P /B:-?78f8Ð=Ö	aL8Ð-D'G		M	M
8'(!8'8Ð=Ö	. Km8Ð		M	M
. -Dr.?r'G8Ð=Ö\ëRÒp - T%	~`5B		M	M
B¼•«^ +Øª-8Ð=Ö	\•5B		M	M
P'8f, 8Ð=Ö	aL8Ð-D'G		M	M

			%	%
‡)5'Š8Đ=Ö		9364	11.98	20.73
1•(q8Đ=Ö/ =Ö©		9285	7.30	15.02
&Ž'i8Đ=Ö		9285	10.07	25.42
(!Oš8Đ=Ö=Ö©		9264	7.73	11.83

4-4 OP20 112.93%

OP20 35% 3 50% 4
3.48

4-4 OP20

					%
	\5B		M	M	M
	~`5B		M	M	M
	P . 5x		M	M	M
	~`5B		M	M	M
	P . 5x		M	M	M
	...%5B		M	M	M
	EP5B		M	M	M
	Eb5B		M	M	M
	) ~ P		M	M	M
	~`5B		M	M	M
	aL8Đ-D'G		M	M	M
	aL8Đ-D'G		M	M	M
	. Km8Đ		M	M	M
	~`5B		M	M	M

8'(!8'8Đ=Ö	. Km8Đ			M	M
. -Dr.?r'G8Đ=Ö \\ëRÖp - T%	~`5B			M	M
B¼.«^ +Øª-8Đ=Ö	*5B			M	M
P¹8f, 8Đ=Ö	aL8Đ-D'G			M	M
‡ }5'Š8Đ=Ö	aL8Đ-D'G			M	M
1•(q8Đ=Ö/ =Ö©	~`5B			M	M
&Ž'i8Đ=Ö	P`R¥			M	M
(!Oš8Đ=Ö=Ö©	...%o5B			M	M



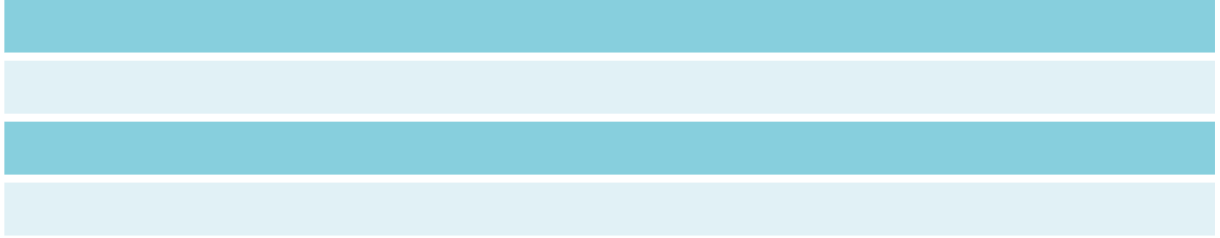
05 _____

2013 2022

—

2013 2017

7



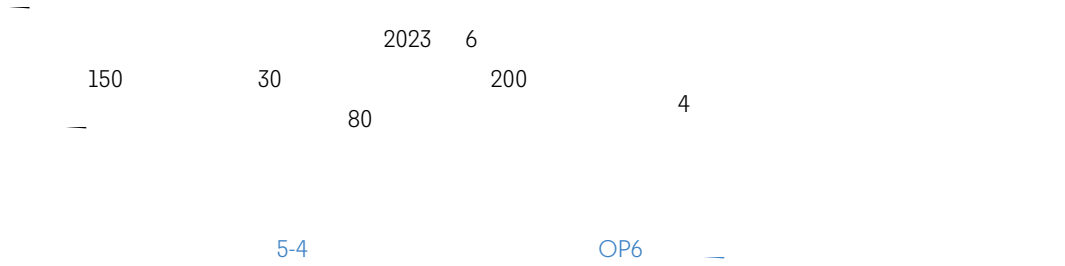
5-3



5.3

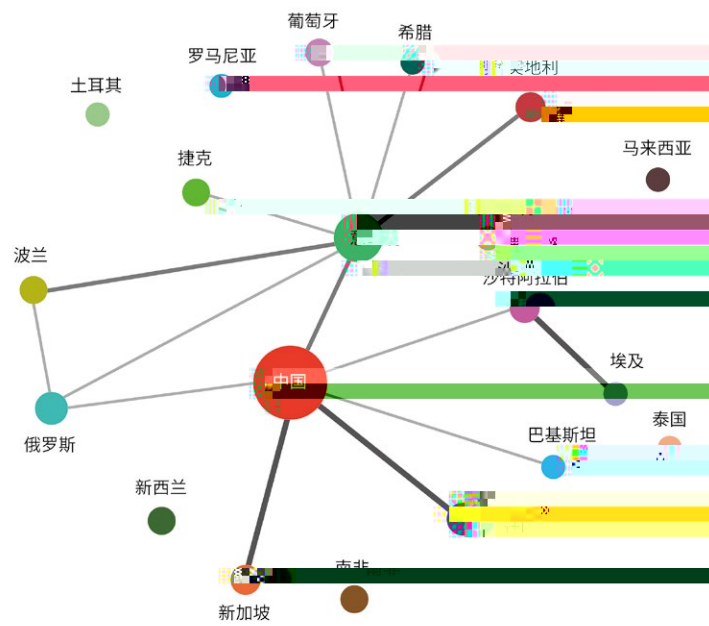
5.4

5-4 2013 2022
OP3

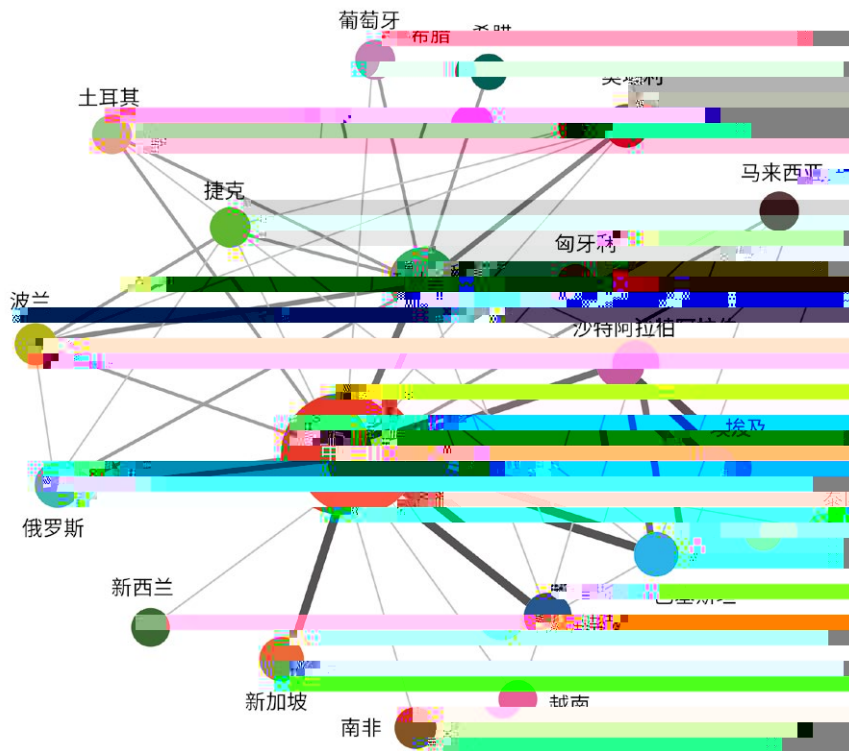


	2013 — 2017		2018 — 2022		
		(%)		(%)	
	14917	4.3	29418	4.9	1.0
	5533	3.5	27729	4.1	4.0
	13635	4.1	27278	4.7	1.0
	9174	6.8	20203	5.6	1.2
	6016	7.5	17523	6.2	1.9
	6465	5.5	14457	4.4	1.2

5-6 5-7 2013 2017
2018 2022



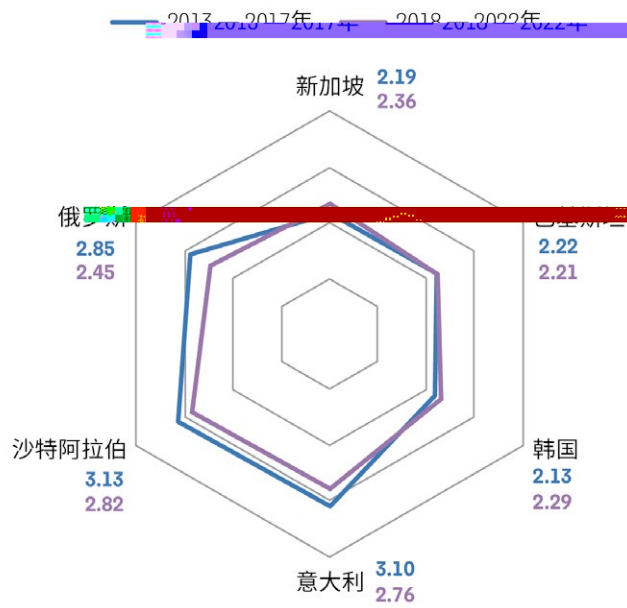
5-6 2013 2017 24



5-7 2018 2022

OP6

5-8 5-4



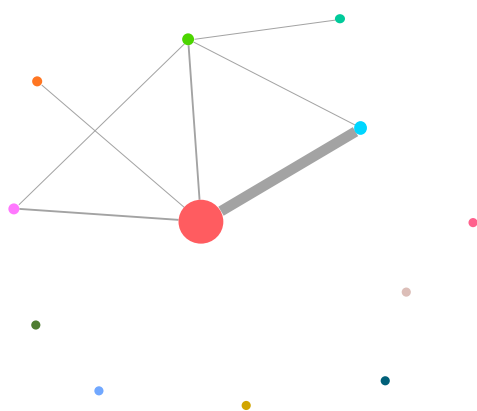
5-8 2013 2017 2018 2022

OP6

5-5

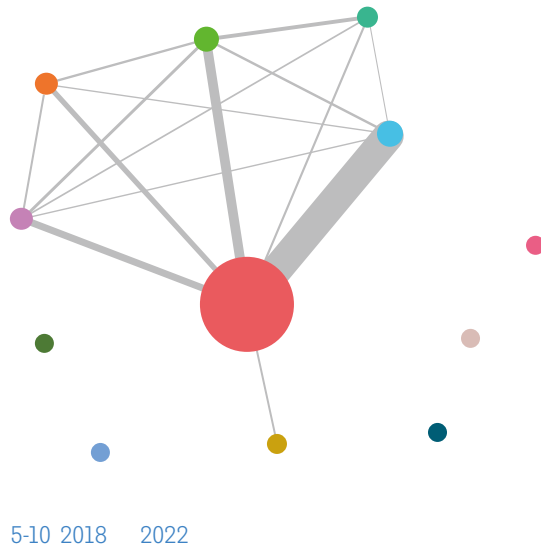
	2013 — 2017		2018 — 2022		
		(%)		(%)	
	14917	4.3	29418	4.9	1.0
	2649	5.7	9298	5.2	2.5
	2692	5.4	6682	3.9	1.5
	1356	6.6	5073	7.9	2.7
	569	9.7	2058	5.2	2.6
	712	11.7	1896	6.8	1.7
	151	10.6	655	1.5	3.3
	95	4.2	389	5.1	3.1
	71	5.6	185	6.0	1.6
	35	8.6	144	4.9	3.1
	/	/	5	0.0	/

5-9 5-10 2013 2017 2018 2022

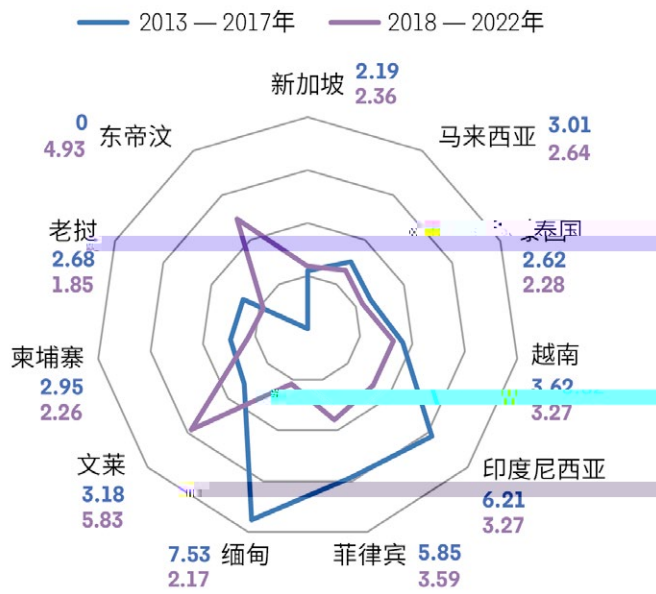


5-9 2013 2017

26



5-11



5-11 2013 2017 2018 2022

5.6

OP3

27

2013 2017

2018 2022

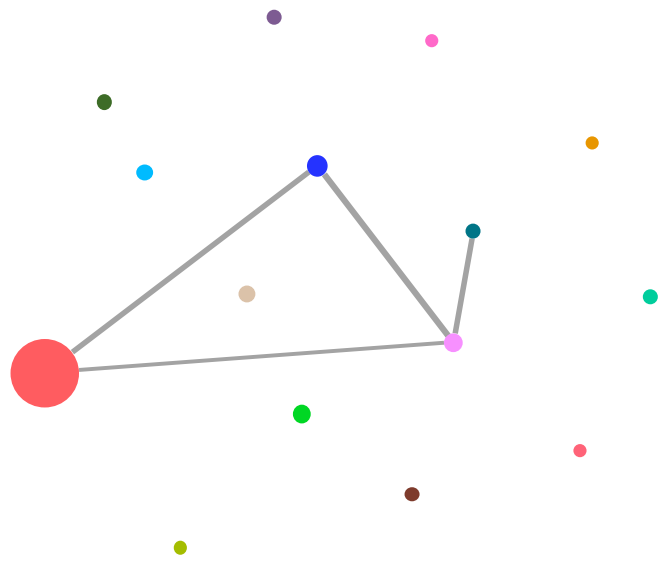
5-6 2013 2022

5-6

OP10

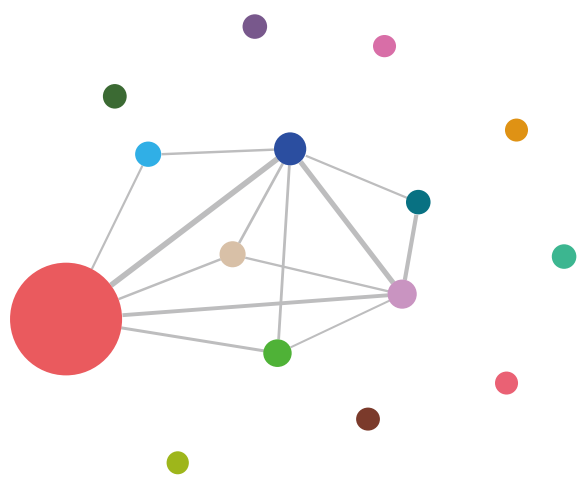
	2013 — 2017		2018 — 2022		
		(%)		(%)	
	4331	6.1	8774	5.8	1.0
	3106	5.6	6030	5.3	0.9
	2600	7.4	4690	6.1	0.8
	2479	6.5	3852	5.7	0.6
	2125	6.5	3401	7.1	0.6
	1468	7.5	2097	6.1	0.4
	1081	7.0	1898	6.3	0.8
	1337	4.9	1877	5.7	0.4
	1229	7.2	1830	5.4	0.5
	1090	6.3	1399	6.4	0.3

5-12 5-13 2013 2017 2018 2022 2013 2017



5-12 2013 2017

28



5-13 2018 2022

5-14 2013 2017 2018 2022

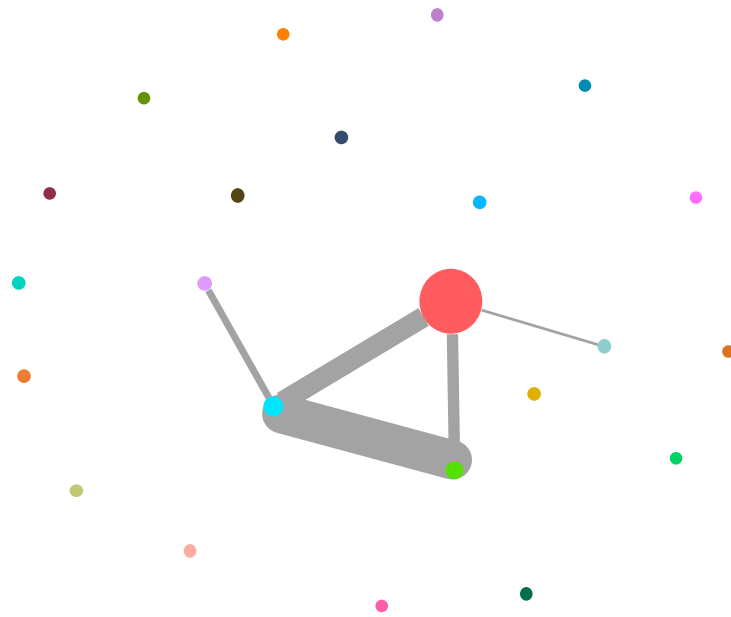
OP10

5-7

TOP10

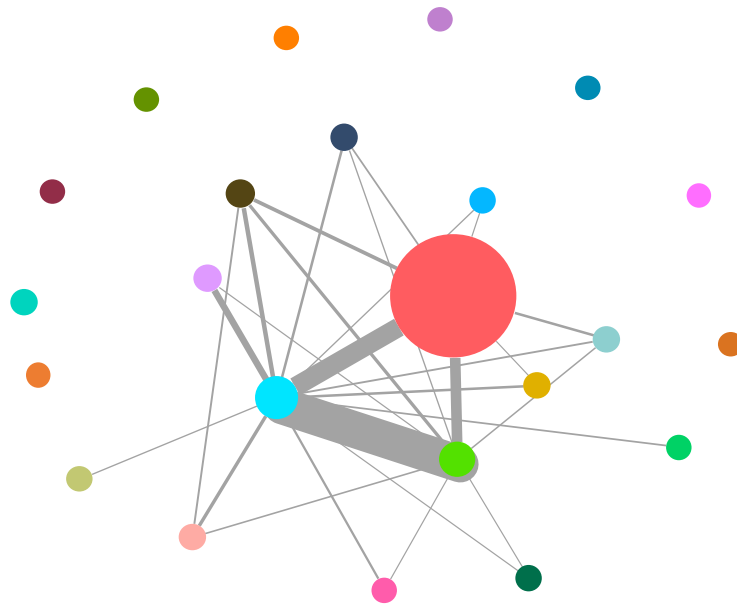
	2013 — 2017		2018 — 2022		
		(%)		(%)	
	6016	7.5	17523	6.2	1.9
	2014	6.5	9683	4.3	3.8
	618	8.3	3449	6.9	4.6
	1260	6.2	2337	5.8	0.9
	279	12.5	1608	6.1	4.8
	652	8.9	1118	6.0	0.7
	259	12.0	1075	7.1	3.2
	192	15.6	950	7.6	3.9
	327	2.5	926	1.1	1.8
	148	28.4	744	9.8	4.0

5-15 5-16 2013 2017
2018 2022



5-15 2013 2017

29

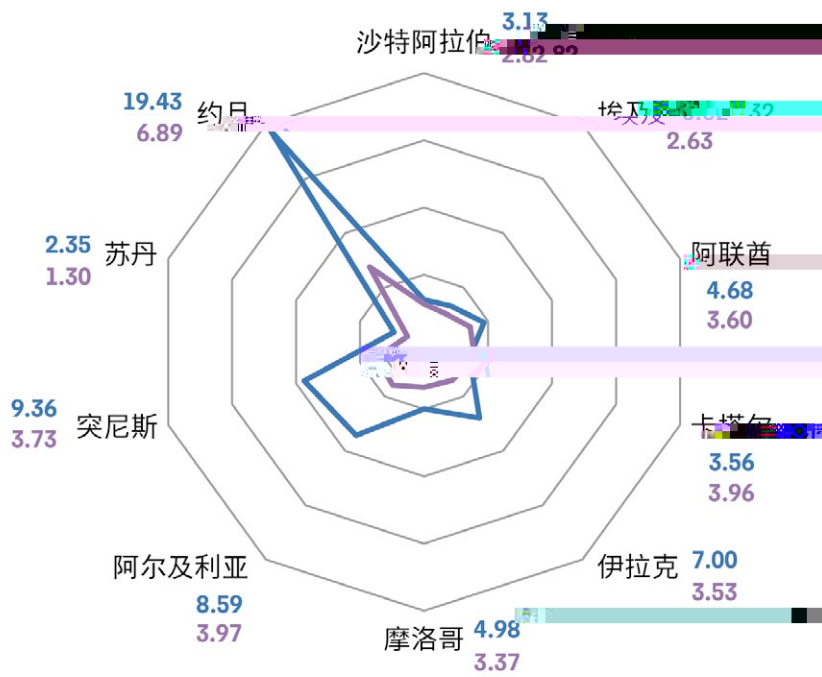


5-16 2018 2022

OP10

5-17

— 2013 — 2017年 — 2018 — 2022年

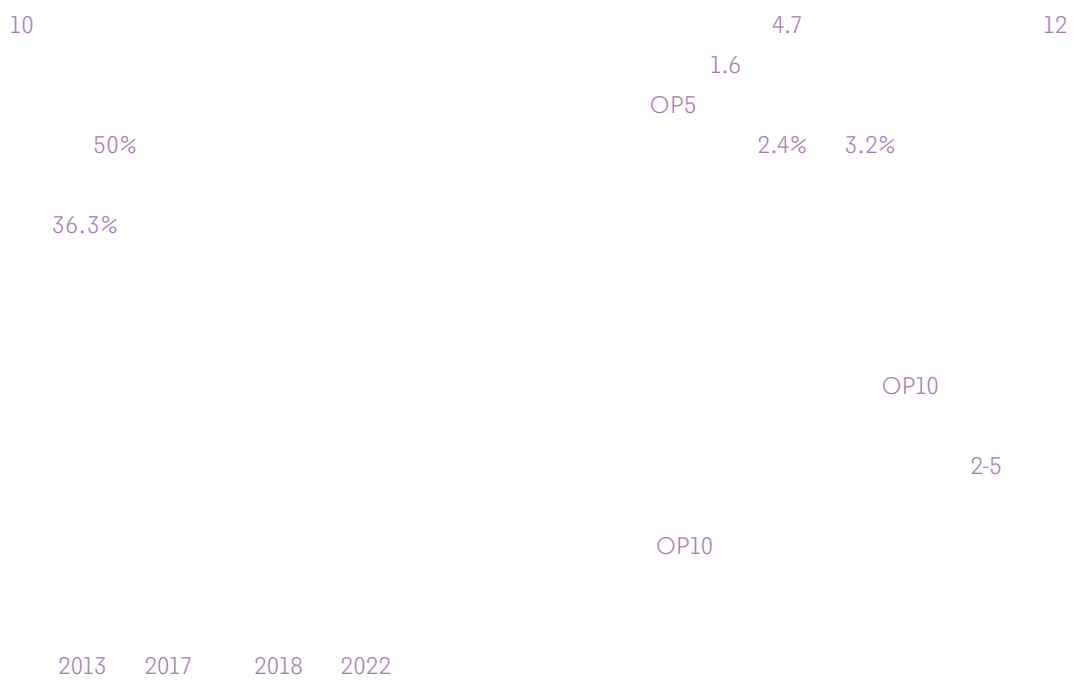


5-17 2013 2017 2018 2022

TOP10



06



22 E I 30

50%

6.1

36.3%

6-1 2013 2022

6-1

ESI			% ³¹	%
	648833	166709	16.10	25.7
	618478	110742	10.70	17.9
	486098	109638	10.59	22.6
	473884	83189	8.04	17.6
	303590	77967	7.53	25.7
	195063	60330	5.83	30.9
	182558	40061	3.87	21.9
	170469	58084	5.61	34.1
	165151	59883	5.78	36.3
	142445	33681	3.25	23.6
	134723	39778	3.84	29.5
	120597	30379	2.93	25.2
	117577	31420	3.03	26.7
	114945	18073	1.75	15.7
	73764	19874	1.92	26.9
	62147	26003	2.51	41.8
	46583	12411	1.20	26.6
	43826	10866	1.05	24.8
	38799	19489	1.88	50.2

30. E I

22 E I

31.

100%

ESI			% ³¹	%
	34060	13428	1.30	39.4
	20670	11840	1.14	57.3
	4411	1442	0.14	32.7

2013 2017 2018 2022

6-2

12

1.6

4.7

6-2 2013 2017 2018 2022

ESI	2013 — 2017	2018 — 2022	%	%
	46524	120185	158.3	168.7
	41524	69218	66.7	51.3
	35195	74443	111.5	103.5
	31553	51636	63.6	96.0
	32362	45605	40.9	36.9
	15949	44381	178.3	213.1
	15689	24372	55.3	73.7
	18102	39982	120.9	139.0
	20083	39800	98.2	124.0
	15063	18618	23.6	69.7
	14308	25470	78.0	90.9
	11094	19285	73.8	55.4
	9383	22037	134.9	144.2
	6802	11271	65.7	102.1
	8216	11658	41.9	81.4
	6902	19101	176.7	220.6
	4660	7751	66.3	100.9

32

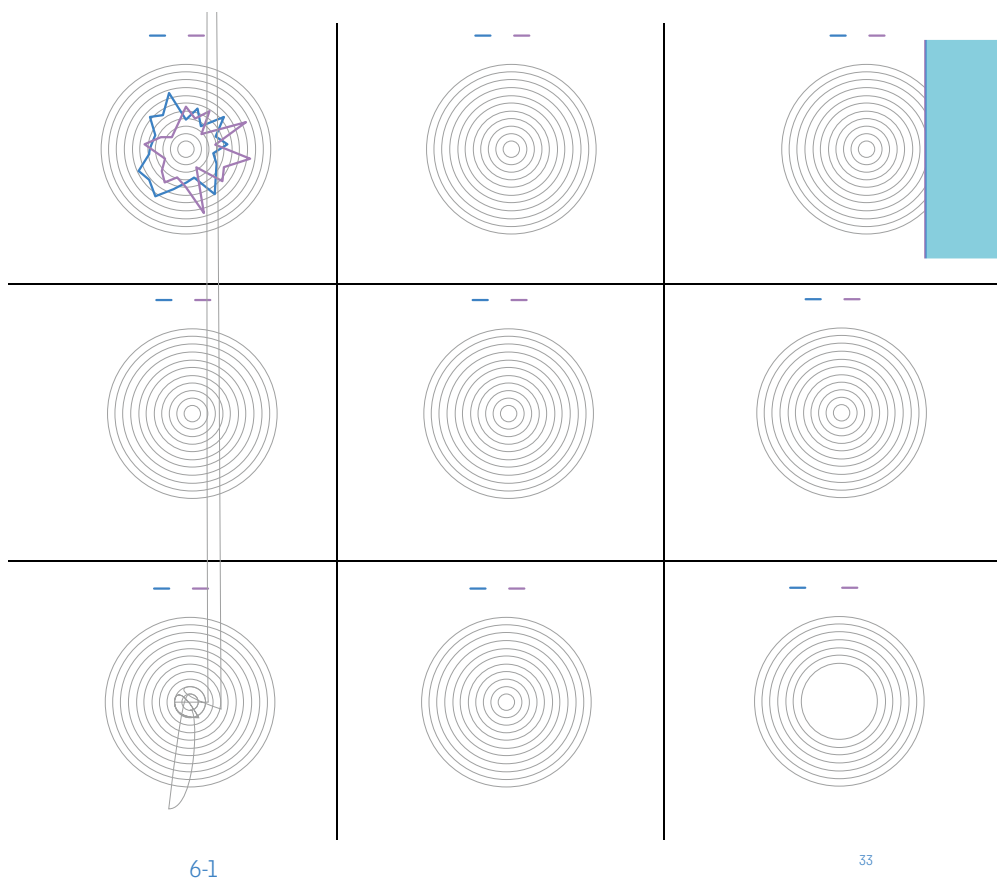
—

OP10

6-1

1

OP5



6-1

33

32

33. 6-1

5

2.4% 3.2%
6-3

6-3

OP5

6-3

OP5

	CNCI	CNCI		%	%
	1.64	1.17	4306	75.50	2.58
	1.71	1.22	3554	76.25	3.21
	1.72	1.22	3258	76.27	2.97
	1.76	0.99	2003	37.24	2.41
	1.66	1.07	2028	59.62	2.60

6.4 TOP5

5.4

10.8%

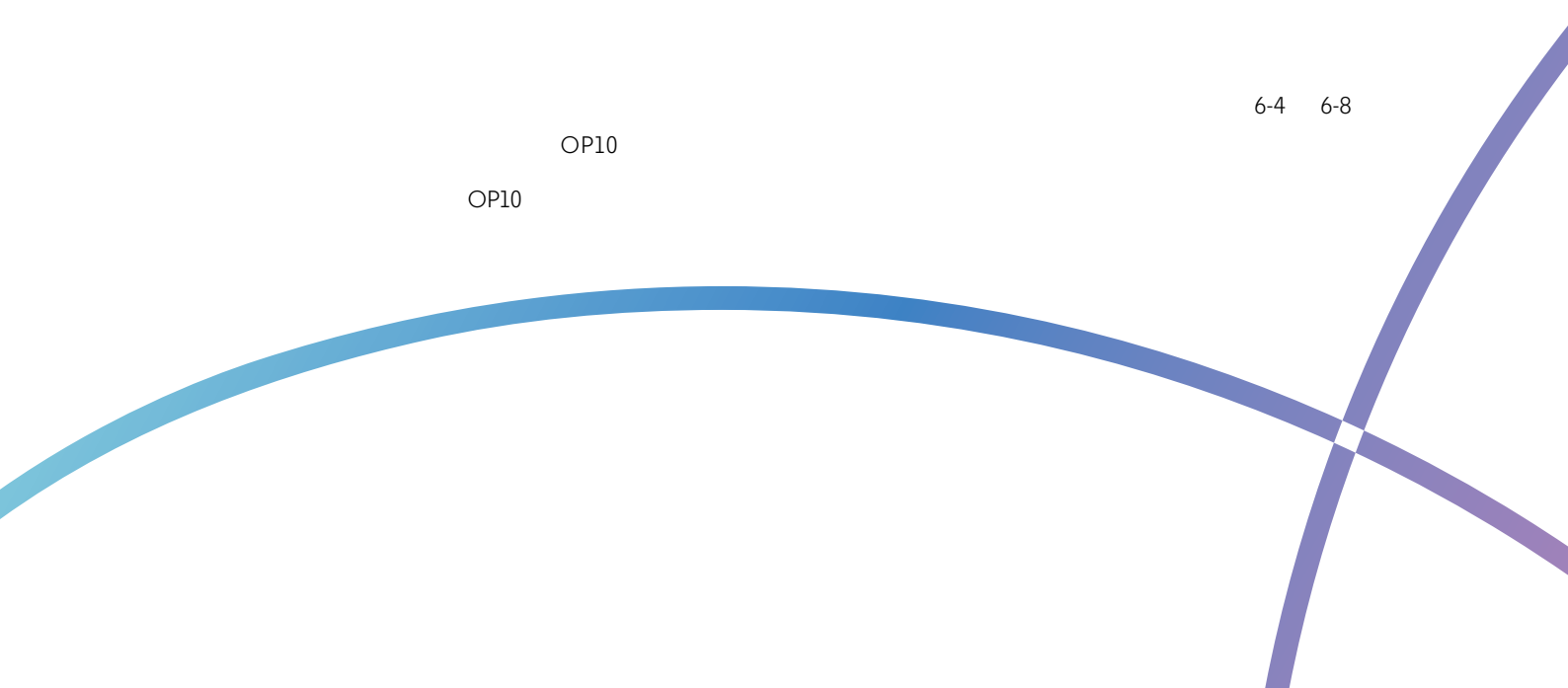
OP10

2 5

6-4 6-8

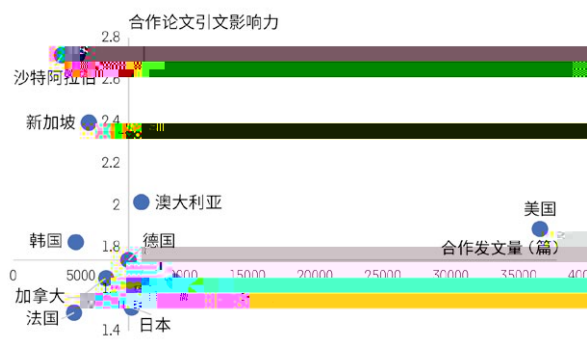
OP10

OP10



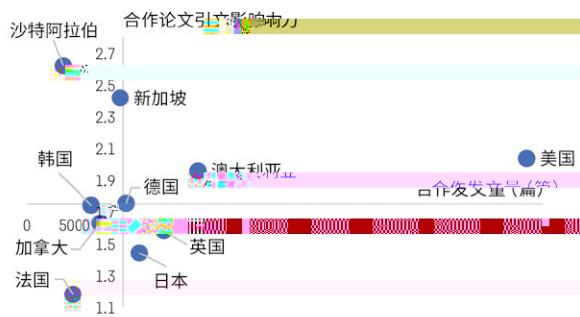
6-4

OP10



6-5

OP10

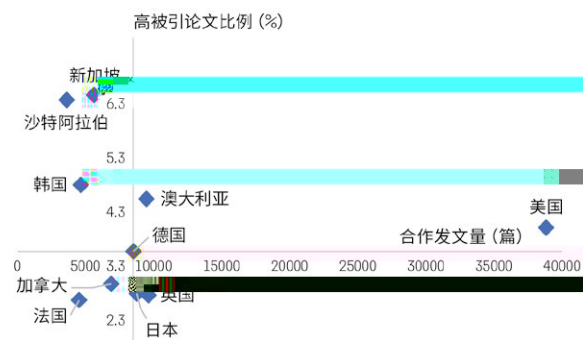


6-6

OP10

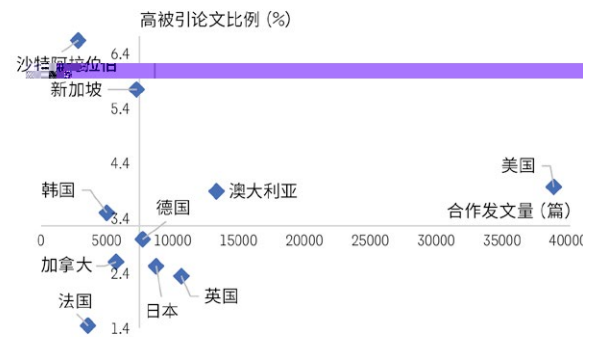
6-4

OP10



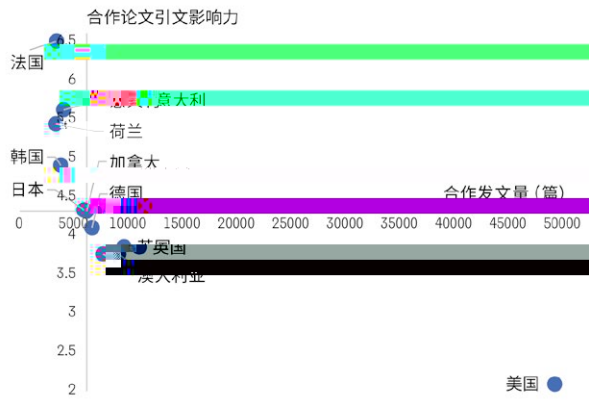
6-5

OP10



6-6

OP10



6-7

OP10

6-7

OP10

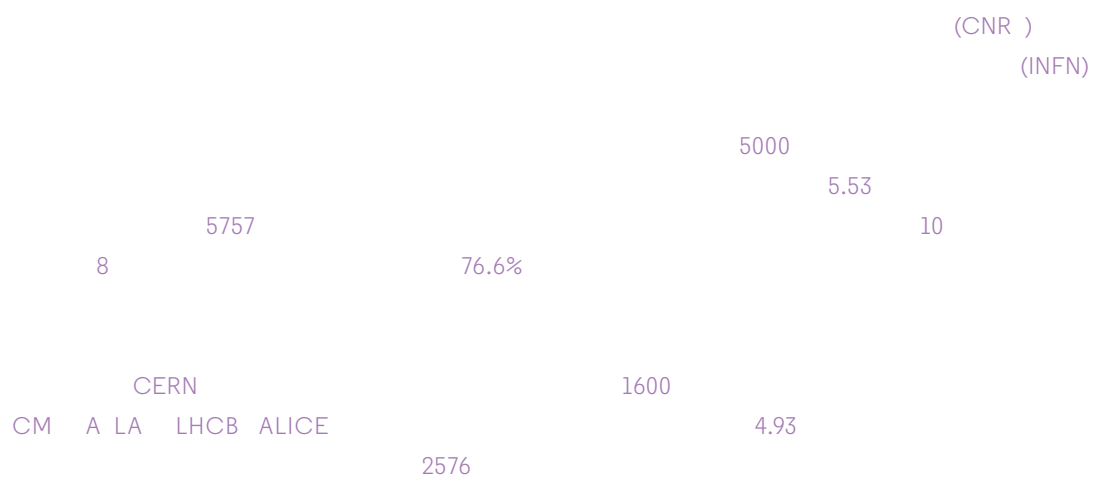
6-8

OP10

6-8

OP10

07 _____



7.1

2013

LHC

GEO

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100

DDE

ONCE

9108

63.2% 5757

8

7-1

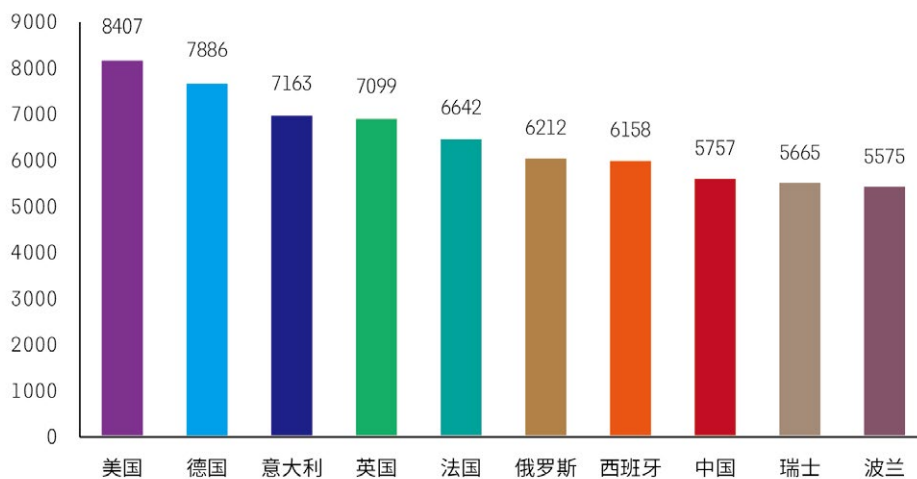
7-2

60%

I ER

KA

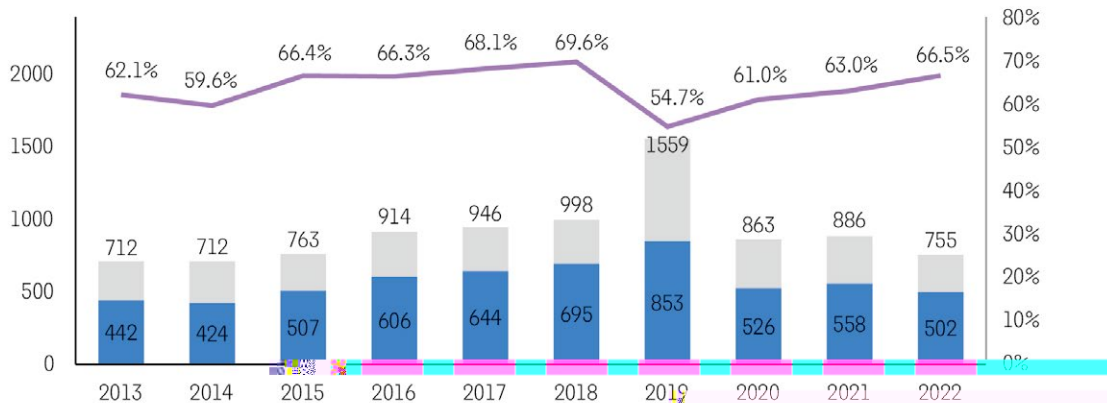
多作者论文数 (篇)



7-1

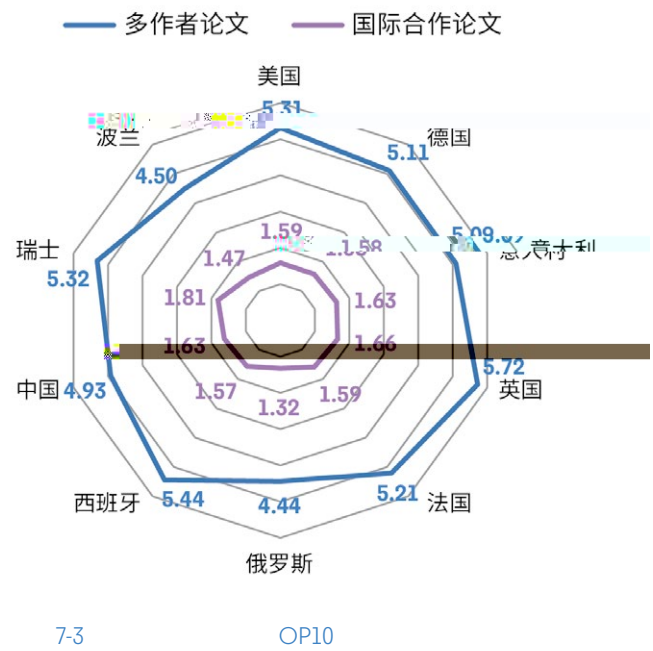
OP10

■ 中国参与的多作者论文数 (篇)
 ■ 全球多作者论文数 (篇)
 — 中国参与的多作者论文数全球占比



7-2

7-3 OP10 4.44 5.72
2



7.2

5757 76.6%
7-1 7-2

7-1 OP10, O 7-2 OP10

WOS	OP10, O	7-2	OP10
	3147	5.9.19	2381
	1890	5.9.428	744
	1009	5.9.73	652
	768	5.200.58	744916>-3.7 <002CA>1-100
	251		
	218		
	166		
	161		
	73		
	48		

20 80
CERN

CERN
4

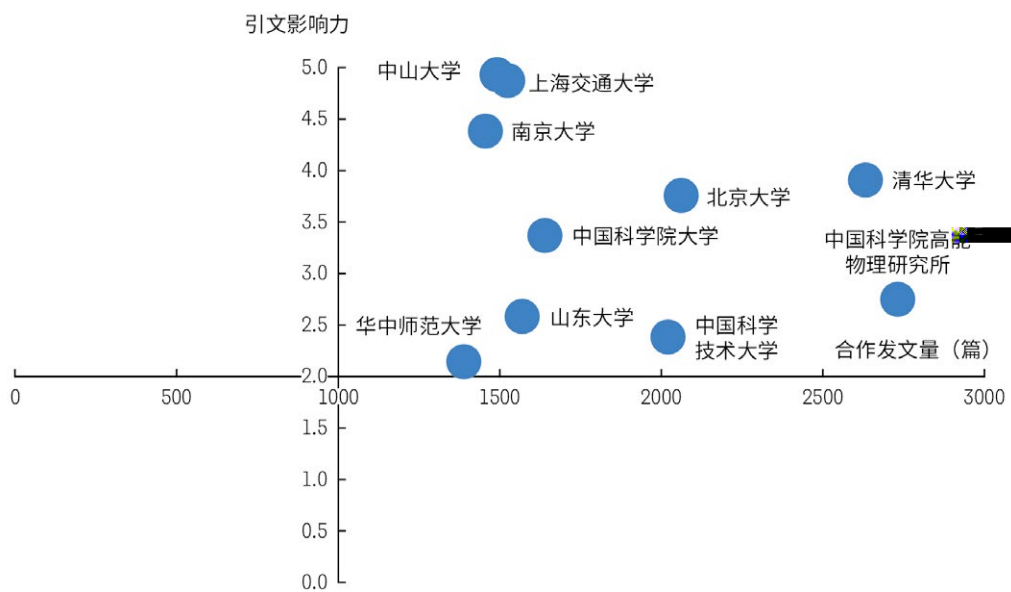
LHC

				TOP3 WOS
		4995	3.76	3191 1847 899
		4770	4.04	2891 1915 982
		4635	2.41	3102 1573 1092
		4513	4.07	2788 1571 938
		4294	3.59	2659 1519 795

OP10 1600 OP10 2
 OP10 4.93
 7-5 OP10

				TOP3 WOS
	2732	2.75		2157 1127 501
	2632	3.91		1842 990 463
	2062	3.76		1442 849 369
	2021	2.38		1491 930 414

TOP3 WOS			
	1640	3.37	1165 672 268
	1570	2.58	1156 618 344
	1525	4.87	1064 555 234
	1492	4.93	1126 612 237
	1456	4.38	1100 622 234
	1389	2.14	934 543 396





2 C 610

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