

## ASIA STUDIES CENTRE

# The Role of Hostile States in Britain's Academic Institutions: A Data Summary

By Sam Armstrong

### Introduction

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In January 2022, the Henry Jackson Society compiled a statistical analysis of research collaborations between academics at top UK universities and those from ‘very high-risk’ institutions within three foreign states: the PRC, Russian Federation, and the Islamic Republic of Iran. Significant results from that exercise and its methodology are detailed below.

In the case of China, the paper took its “very high risk” classification from the China Defence Universities Tracker, originally compiled by Alex Joske and first released by ASPI in November 2019.<sup>1</sup> In the case of Iran and Russia, it sought to emulate it.

To restrict this study to only those institutions that posed the greatest counter-proliferation risks, only those studied-state HEIs that met the “very high risk” criteria were included. Taking those institutions considered “very high risk” by ASPI, a Chinese list of 92 included institutions was drawn up. The full list can be found in Annex 1 of this report. We then asked experts on Russia and Iran academic institutions to apply the same criteria listed above to HEIs in their respective countries. Each of them compiled a list for us of institutions of comparable risk. The list of these institutions is also detailed in Annex 1.

The fact that a Russian or Iranian (or indeed Chinese) institution is included in this bulletin does not, in and of itself, suggest wrongdoing of any form, merely that in the opinion of the report’s authors that it satisfies similar criteria to those laid out in the ASPI China Defence Universities Tracker.

## Data Acquisition and Analysis

Having selected the collaborative parameters for inclusion, this research drew its data on individual collaborations from the ‘Scopus’ system.

To assess the overall scale of research collaborations between British HEIs and foreign institutions of concern, all papers that featured at least one author from one or more of the UK HEIs and at least one author from a studied-state HEI that met the inclusion criteria listed in the Scopus database since 2017 were downloaded for inclusion.

As an initial filter, only papers within scientific fields were selected.<sup>2</sup>

Records within the dataset were then excluded for a sequential series of factors. These were that the record included within Scopus referred to an Errata rather than an original paper, no Digital Object Identifier record was included (precluding assessment for whether the paper was a duplicate), and that the record included no “index keyword” terms associated (precluding assessment as to the sensitivity of research).

Figure 1a: Total Output for UK-China, UK-Russia, and UK-Iran academic collaboration which met the inclusion criteria (2017-2021)

UK-China	11,611
UK-Russia	354
UK-Iran	1,450
Total	13,415

Of the 13,415 outputs contained in the study, 11,611 were UK-China academic collaborations (86.55 per cent), 354 were UK-Russia academic collaborations (2.64 per cent), with 1,450 being UK-Iran academic collaborations (10.81 per cent).

Demonstrating the dominance of UK-China academic collaborations in the study, the combined number of UK-Iran and UK-Russia collaborative outputs across the five years is lower than the year with the lowest number of UK-China collaborative outputs (in 2017) - 1,803 and 1,815 respectively. The year with the highest number of UK-China academic collaborative outputs is 2020 (2,813) – an increase of 998 outputs from 2017.

There is a drop in all UK-HS outputs from 2020 to 2021 – 505 outputs in the case of China. But it should be noted that (along with the UK-Russia and UK-Iran data) the output figures for 2021 are based on logging papers published in the period between the beginning of January 2021 and the end of October 2021. This means papers published in the months of November or December 2021 are not included in the analysis. Once the missing months have been allowed for, a conservative projection (values multiplied by 12/10) sees a very slight rise in UK-Russia collaborations and comparably modest declines in UK-China and UK-Iran collaborations. Given the numerical disparities in month-to-month publishing of journals, a fair summary assessment is that the number of outputs remains broadly consistent between 2020 and 2021.

Figure 2a(i): Instances of academics at 33 UK HEIs participating in UK-China academic collaborations which met the inclusion criteria (2017, 2018, 2019, 2020, 2021)

	2017	2018	2019	2020	2021	Total (2017-2021)
University of Aberdeen	25	14	25	19	22	105
Aston University	48	47	45	28	17	185
University of Bath	28	29	33	35	34	159
University of Birmingham	77	102	110	126	88	503
University of Bristol	55	55	67	59	41	277
University of Cambridge	87	148	136	203	171	745
Cardiff University	45	52	53	80	82	312
Cranfield University	40	52	32	90	48	262
Durham University	31	27	51	59	35	203
University of Edinburgh	89	71	78	108	87	433
University of Exeter	40	49	49	63	67	268
University of Glasgow	57	89	110	93	70	419
Imperial College London	129	148	196	260	219	952
Keele University	0	1	0	5	1	7
King's College London	42	26	30	42	50	190
Lancaster University	48	90	61	65	58	322
University of Leeds	75	64	113	102	91	445
University of Leicester	9	26	51	63	46	195
University of Liverpool	81	82	132	136	94	525
Loughborough University	40	41	47	46	48	222
University of Manchester	132	153	210	210	156	861
University of Newcastle	77	100	110	83	58	428
University of Nottingham	102	97	109	107	112	527
University of Oxford	89	108	132	173	126	628
Queen Mary University	119	140	147	172	145	723
Queen's University Belfast	36	44	53	43	56	232
University of Sheffield	72	82	78	79	81	392
University of Southampton	99	116	129	142	111	597
University of St Andrews	6	15	16	12	6	55
University of Surrey	44	71	88	88	84	375
University College London	116	162	203	223	180	884
University of Warwick	62	59	109	103	85	418
University of York	28	27	45	61	44	205
TOTAL	2,028	2,387	2,848	3,178	2,613	13,054

Figure 2a(i) presents data for the number of instances where academics affiliated to a UK university participated in UK-China an academic collaboration in 2017, 2018, 2019, 2020 and 2021. The number of instances exceeds that number of papers as some papers include authors at multiple UK institutions.

Out of the 33 UK HEIs included in this analysis, Imperial College London ranks first in terms of the overall 2017-2021 total (952 instances). The remaining institutions which make up the top five institutions for instances of UK-China collaborations are University College London (884 instances), University of Manchester (861 instances), University of Cambridge (745 instances) and Queen Mary University (723 instances).

Figure 2b(i): Instances of UK-China Collaborations by Chinese institutions which met the inclusion criteria (2017, 2018, 2019, 2020, and 2021)

	2017	2018	2019	2020	2021	Total (2017-2021)
Academy of Military Science	0	4	4	2	3	13
Academy of Military Medical Science	3	4	7	5	2	21
Aero Engine Corporation of China	1	4	6	9	7	27
Air Force Early Warning Academy	0	0	1	0	0	1
Air Force Engineering University	0	2	7	3	1	13
Air Force Medical University	16	11	10	15	6	58
Air Force Radar Academy	1	0	1	0	0	2
Army Academy of Armoured Forces	3	4	3	1	2	13
Army Engineering University	0	5	4	2	6	17
Army Medical University	14	13	9	12	5	53
Army Special Operations Academy	0	0	0	1	0	1
Aviation Industry Corporation of China	6	5	0	0	1	12
Aviation University of Air Force	0	0	3	2	1	6
Beihang University	170	187	217	231	191	996
Beijing Electronic Science and Technology Institute	88	134	134	159	151	666
Beijing Institute of Technology	103	106	113	173	169	664
Beijing University of Posts and Telecommunications	61	93	118	125	92	489
Centre for High Pressure Science & Technology Advanced Research	5	16	14	13	12	60
Changchun Institute of Optics, Fine Mechanics and Physics	4	3	4	13	7	31
China Aerodynamics Research and Development Center	2	6	11	6	12	37
China Aerospace Science and Industry Corporation	3	1	1	0	0	5
China Electronics Technology Group Corporation	1	2	2	2	4	11
China Nuclear Power Technology Research Institute	0	1	2	3	2	8
China Shipbuilding Industry Corporation	2	0	0	1	0	3
China State Shipbuilding Corporation	0	0	0	1	0	1

Chinese Academy of Engineering Physics	16	22	25	27	14	104
Commercial Aircraft Corporation of China	2	6	4	4	4	20
Harbin Engineering University	38	53	41	48	69	249
Harbin Institute of Technology	163	169	199	207	173	911
Huazhong University of Science and Technology	134	160	236	251	181	962
Hunan University (HUN) Information Engineering Technology	0	0	0	1	1	2
Institute of Chemical Defence	0	0	1	0	0	1
Jilin University	38	69	102	111	78	398
Key Laboratory of Electronic Information Countermeasure and Stimulation Technology, Ministry of Education	3	0	0	0	0	3
Nanjing University of Aeronautics and Astronautics	75	81	113	134	134	537
Nanjing University of Science and Technology	35	33	57	58	49	232
National Defense University	0	0	0	1	0	1
National Key Laboratory for Parallel and Distributed Processing	1	0	1	0	0	2
National Key Laboratory for Remanufacturing	3	0	3	1	2	9
National University of Defense Technology	74	89	106	87	56	412
Naval University of Engineering	2	0	3	2	3	10
Navy Medical University	19	18	7	15	6	65
North China Institute of Aerospace Engineering	0	0	0	2	1	3
North University of China	3	14	15	25	6	63
Northwest Institute of Nuclear Technology	5	7	4	4	2	22
Northwestern Polytechnical University	66	83	118	149	178	594
People's Public Security University of China	0	0	0	1	0	1
Rocket Force University of Engineering	1	0	0	0	0	1
Shandong University	67	82	130	168	122	569
Shenyang Ligong University	3	0	2	5	1	11
Sichuan University	106	127	139	157	177	706
Space Engineering University	0	0	1	1	1	3
State Key Laboratory of Information Security	2	0	1	1	1	5
Tsinghua University	326	379	448	463	370	1986

University of Electronic Science and Technology of China	136	188	200	161	115	800
University of International Relations	0	0	0	1	0	1
Wuhan University	106	99	117	212	150	684
Xidian University	58	104	122	85	62	431
Xi'an Modern Chemistry Research Institute	0	0	1	1	0	2
Xi'an Technological University	10	6	4	7	7	34
TOTAL	1,977	2,396	2,874	3,170	2,638	13,055

Additionally, a year-by-year analysis from 2017 to 2021 of instances of UK-China collaborations by Chinese institution types was conducted. There are four types for this analysis: CMC, Entity List, EO 13959, and Seven Sons.

'CMC' institutions are those HEIs whose governance structure places it under the authority or direct supervision of the Central Military Commission of the Communist Party of China. 'Entity List' institutions are those bodies included on the 'Entity List' issued by the US Department of Commerce, which restricts US entities from sharing certain categories of technology with those bodies. EO13959 includes those entities listed pursuant to the US Executive Order 13959 and its successors as "Communist Chinese Military Companies". "Seven Sons" are those institutions listed by ASPI as falling within the so-called "Seven Sons of National Defense".

The number of instances found for 2021 are projections (2021 instances logged were from January-October, multiplied by 12/10, and then rounded to the nearest integer). There are year-on-year increases to report for Entity List institutions (776, 940, 1,070, 1,086, and 1,307 instances) and Seven Sons establishments (650, 712, 858, 1,000, and 1,156 instances respectively). There are also year-on-year increases – from 2017 to 2020 - in instances of UK-China academic collaborations among CMC institutions (280, 337, 384, and 397 instances). The year-by-year pattern of instances of UK-China academic collaborations is more volatile for Chinese institutions that fall into the EO 13959 category – peaking in 2021 with 35 (projected) instances.

Annex 1:

UK HEIs:

These HEIs were:

1. University of Aberdeen
2. Aston University
3. University of Bath
4. University of Birmingham
5. University of Bristol
6. University of Cambridge
7. Cardiff University
8. Cranfield University
9. Durham University
10. University of Edinburgh

11. University of Exeter
12. University of Glasgow
13. Imperial College London
14. Keele University
15. Kings College London
16. Lancaster University
17. University of Leeds
18. University of Leicester
19. University of Liverpool
20. Loughborough University
21. University of Manchester
22. University of Newcastle
23. University of Nottingham
24. University of Oxford
25. Queen Mary University
26. Queen's University Belfast
27. University of Sheffield
28. University of Southampton
29. University of St Andrews
30. University of Surrey
31. University College London
32. University of Warwick
33. University of York

Chinese HEIs:

1. Academy of Armored Force Engineering
2. Academy of Military Medical Science
3. Aero Engine Corporation of China
4. Air Force Engineering University
5. Air Force Radar Academy
6. Artillery Academy of People's Liberation Army
7. Aviation University of Air Force
8. Beihang University
9. Beijing Aeronautical Manufacturing Technology Research Institute
10. Beijing Electronic Science and Technology Institute
11. Beijing Institute of Spacecraft System Engineering
12. Beijing Institute of Technology
13. Beijing University of Posts and Telecommunications
14. Center for High Pressure Science and Technology Advanced Research
15. Changchun Institute of Optics
16. China Academy of Engineering Physics
17. China Aerodynamics Research and Development Center
18. China Aerospace Science and Industry Corporation
19. China National Nuclear Corporation
20. China Nuclear Power Technology Research Institute
21. China Shipbuilding Industry Corporation
22. Chinese People's Armed Police Force Academy
23. Commercial Aircraft Corporation of China
24. Electronic Engineering Institute



25. Fourth Military Medical University
26. Harbin Engineering University
27. Harbin Institute of Technology
28. Huazhong University of Science and Technology
29. Hunan University
30. Information Engineering University
31. Institute of Chemical Defense
32. Jilin University
33. Key laboratory of Electronic Information Countermeasures and Simulation Technology, Ministry of Education
34. Military Transportation University
35. Nanjing University of Aeronautics and Astronautics
36. Nanjing University of Science and Technology
37. National Key Laboratory for Remanufacturing
38. National Laboratory for Parallel and Distributed Procession
39. National University of Defense Technology
40. Naval University of Engineering
41. Navy Submarine Academy
42. North China Institute of Aerospace Engineering
43. North University of China
44. Northwest Institute of Nuclear Technology
45. Northwestern Polytechnical University
46. Peoples Liberation Army Engineering University
47. People's Public Security University of China
48. Rocket Force University of Engineering
49. Second Military Medical University
50. Shandong University
51. Shenyang Ligong University
52. Sichuan University
53. Southwest Institute of Applied Magnetism
54. State Key Laboratory of Information Security
55. Third Military Medical University
56. Tsinghua University
57. University of Electronic Science and Technology of China
58. University of International Relations
59. Wuhan University
60. Xi'an Modern Chemistry Research Institute#
61. Xi'an Technological University
62. Xidian University

Russian HEIs:

1. A.F. Mozhaisky Military Space Academy
2. Academy of the Russian Federal Security Service
3. Admiral Makarov State University of Maritime and Inland Shipping
4. CEMI
5. Central Aerohydrodynamic Institute
6. DoroDnicyn Computing Centre
7. EMERCON
8. Institute for Spectroscopy



9. Institute for system programming
10. Institute of biomedical problems
11. Institute of Solid-state physics
12. Ioffe Institute
13. Lebedev Physical Institute
14. Ministry of Defence of the Russian Federation
15. Ministry of Internal Affairs
16. Moscow Aviation Institute
17. Moscow University of the Ministry of Internal Affairs of Russia Named After V.Y.Kikot
18. Program Systems Institute
19. S.M. Kirov Military Medical Academy
20. Saint Petersburg Scientific-research Institute for Physical Culture
21. Saint Petersburg State University of Aerospace Instrumentation
22. Schmidt Institute of the Physics of the Earth
23. Special Astrophysical Observatory
24. St Petersburg State Marine Technical University
25. Ufa State Aviation Technical University
26. Vernadsky Institute of Geochemistry and Analytical Chemistry
27. Baltic State Technical University

Iranian HEIs:

1. Amir Kabir University of Technology
2. Baqiyatallah Medical Sciences University
3. Bu-ali Sina University
4. Ferdowsi University of Mashhad
5. Guilan University
6. Imam Hossein University
7. Iran University of Science and Technology
8. K. N. Toosi University of Technology
9. Malek-ashtar University of Technology
10. Shahid Beheshti University
11. Shahid Sattari Aeronautical University of Science and Technology
12. Sharif University of Technology
13. Shiraz University
14. Shiraz University of Medical Sciences
15. Tehran University
16. Tehran University of Medical Sciences
17. University of Isfahan
18. University of Mashhad

## Endnotes

1 *China Defence Universities Tracker*. ASPI. Available from: <https://unitracker.aspi.org.au/>  
[Accessed 11/01/2022]

2 Excluded subject areas included: Dentistry, Health Professions, Veterinary, Nursing, Decision Sciences, Psychology, Arts & Humanities.