

Appendix table 5-43

S&E articles in astronomy, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
World																
Total articles	6,970	6,511	7,763	7,573	8,227	9,180	8,458	8,479	8,730	8,963	8,724	9,875	10,472	9,488	10,121	11,297
with multiple institutions	4,507	4,148	5,104	5,022	5,773	6,098	6,003	5,988	6,206	6,563	6,541	7,230	8,061	7,501	8,042	8,968
with domestic institutions only	4,213	3,793	4,501	4,330	4,401	5,079	4,440	4,436	4,455	4,535	4,160	4,926	4,891	4,211	4,482	4,928
with international institutions	2,757	2,718	3,262	3,243	3,826	4,101	4,018	4,043	4,275	4,428	4,564	4,949	5,581	5,277	5,639	6,369
Canada																
Total articles	304	275	350	333	342	435	399	449	458	500	538	594	676	785	757	880
with multiple institutions	251	227	275	252	298	350	342	373	379	438	472	509	622	722	698	811
with domestic institutions only	75	72	114	104	66	111	90	100	100	86	89	112	85	98	88	96
with international institutions	229	203	236	229	276	324	309	349	358	414	449	482	591	687	669	784
Mexico																
Total articles	124	142	195	166	208	219	178	214	212	176	220	216	260	226	213	243
with multiple institutions	95	117	174	143	172	184	146	173	176	153	173	191	233	194	189	211
with domestic institutions only	35	28	27	29	51	52	42	52	52	38	59	41	47	48	37	48
with international institutions	89	114	168	137	157	167	136	162	160	138	161	175	213	178	176	195
United States																
Total articles	3,366	2,669	3,836	3,554	3,855	4,268	3,939	4,180	4,172	4,252	4,314	4,520	5,260	4,690	4,771	5,565
with multiple institutions	2,523	1,998	2,897	2,747	3,104	3,352	3,225	3,399	3,374	3,518	3,636	3,807	4,561	4,145	4,264	4,937
with domestic institutions only	1,796	1,287	1,898	1,692	1,705	1,905	1,686	1,758	1,737	1,707	1,578	1,686	1,887	1,515	1,463	1,656
with international institutions	1,570	1,382	1,938	1,862	2,150	2,363	2,253	2,422	2,435	2,545	2,736	2,834	3,373	3,175	3,308	3,909
Argentina																
Total articles	59	62	93	78	119	125	111	95	109	114	108	140	126	122	166	155
with multiple institutions	46	50	74	64	100	100	93	77	101	102	97	133	113	117	150	148
with domestic institutions only	19	19	35	25	32	37	32	39	17	32	29	31	29	25	45	31
with international institutions	40	43	58	53	87	88	79	56	92	82	79	109	97	97	121	124
Brazil																
Total articles	141	127	143	160	145	206	143	140	173	183	163	223	204	209	236	230
with multiple institutions	108	100	106	126	110	162	115	105	134	144	135	172	174	174	200	205
with domestic institutions only	49	41	47	52	44	63	45	49	59	65	49	75	56	56	69	52
with international institutions	92	86	96	108	101	143	98	91	114	118	114	148	148	153	167	178
Chile																
Total articles	144	110	152	157	232	323	294	295	332	384	368	357	428	439	529	615
with multiple institutions	130	95	144	148	223	303	284	281	318	375	365	349	416	432	521	601
with domestic institutions only	17	15	9	13	12	22	14	18	18	15	3	11	14	14	10	18
with international institutions	127	95	143	144	220	301	280	277	314	369	365	346	414	425	519	597
Austria																
Total articles	63	84	79	63	77	78	98	92	108	113	124	146	186	219	216	233
with multiple institutions	51	62	63	56	69	66	85	71	95	101	118	135	168	215	208	227
with domestic institutions only	15	22	18	9	10	13	16	23	15	12	6	12	18	6	12	6
with international institutions	48	62	61	54	67	65	82	69	93	101	118	134	168	213	204	227

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S&E articles in astronomy, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Belgium																
Total articles	78	106	79	89	120	149	149	126	181	163	191	214	256	315	335	350
with multiple institutions	56	79	60	69	101	120	128	106	149	140	172	183	238	303	319	332
with domestic institutions only	26	33	27	26	23	36	33	22	39	26	25	38	23	20	23	25
with international institutions	52	73	52	63	97	113	116	104	142	137	166	176	233	295	312	325
Czech Republic																
Total articles	46	51	61	45	63	53	56	54	91	91	99	132	116	109	146	134
with multiple institutions	26	37	44	32	48	37	45	48	72	79	86	103	96	103	133	119
with domestic institutions only	21	14	19	15	20	19	13	6	26	18	18	36	28	15	21	28
with international institutions	25	37	42	30	43	34	43	48	65	73	81	96	88	94	125	106
Denmark																
Total articles	92	108	125	120	119	122	128	108	107	124	114	102	141	182	249	248
with multiple institutions	78	95	113	107	106	105	117	100	104	114	113	98	137	175	242	239
with domestic institutions only	18	16	17	16	16	22	15	11	4	11	3	8	5	10	13	12
with international institutions	74	92	108	104	103	100	113	97	103	113	111	94	136	172	236	236
Finland																
Total articles	62	76	74	81	106	100	106	92	121	124	112	135	152	121	138	205
with multiple institutions	51	67	70	73	86	83	96	80	113	117	109	127	145	116	132	192
with domestic institutions only	12	15	11	17	25	22	16	18	14	12	9	11	14	8	11	21
with international institutions	50	61	63	64	81	78	90	74	107	112	103	124	138	113	127	184
France																
Total articles	704	735	741	799	940	998	957	1,008	1,083	1,084	1,103	1,288	1,409	1,535	1,557	1,672
with multiple institutions	583	615	641	644	799	810	838	885	968	986	1,011	1,155	1,327	1,453	1,477	1,580
with domestic institutions only	201	187	170	230	244	276	198	205	204	213	174	254	200	176	204	204
with international institutions	503	548	571	569	696	722	759	803	879	871	929	1,034	1,209	1,359	1,353	1,468
Germany																
Total articles	1,079	983	1,005	1,105	1,260	1,430	1,386	1,387	1,419	1,503	1,575	1,759	1,951	2,031	2,189	2,530
with multiple institutions	860	769	849	913	1,066	1,155	1,154	1,174	1,253	1,332	1,388	1,519	1,795	1,878	2,051	2,362
with domestic institutions only	300	296	208	251	260	347	318	286	216	228	240	317	233	233	248	281
with international institutions	779	687	797	854	1,000	1,083	1,068	1,101	1,203	1,275	1,335	1,442	1,718	1,798	1,941	2,249
Greece																
Total articles	52	43	57	62	91	87	75	87	101	114	90	79	117	122	119	134
with multiple institutions	42	36	45	48	79	66	58	73	85	99	75	62	98	113	108	111
with domestic institutions only	15	12	15	20	20	30	22	23	23	29	20	29	27	12	18	32
with international institutions	37	31	42	42	71	57	53	64	78	85	70	50	90	110	101	102
Hungary																
Total articles	34	40	38	41	64	69	56	52	47	56	87	60	86	75	110	99
with multiple institutions	27	34	31	35	57	60	51	48	44	51	79	55	80	73	107	92
with domestic institutions only	7	8	9	8	13	13	9	9	4	10	22	9	7	3	7	13
with international institutions	27	32	29	33	51	56	47	43	43	46	65	51	79	72	103	86

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S&E articles in astronomy, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Ireland																
Total articles	25	26	33	29	15	36	37	45	70	63	82	95	108	119	124	141
with multiple institutions	23	24	27	27	12	31	29	42	62	59	79	90	99	112	116	136
with domestic institutions only	2	3	6	2	3	7	8	4	9	6	5	6	11	7	11	9
with international institutions	23	23	27	27	12	29	29	41	61	57	77	89	97	112	113	132
Italy																
Total articles	565	610	679	719	904	866	949	890	994	987	1,096	1,050	1,218	1,322	1,295	1,386
with multiple institutions	509	533	624	658	840	767	863	818	909	905	1,023	966	1,149	1,257	1,232	1,316
with domestic institutions only	193	200	170	179	213	221	230	222	233	227	232	232	189	196	187	183
with international institutions	372	410	509	540	691	645	719	668	761	760	864	818	1,029	1,126	1,108	1,203
Netherlands																
Total articles	365	335	392	433	482	492	501	457	503	520	499	487	582	691	692	814
with multiple institutions	314	289	361	389	448	441	453	411	460	487	482	448	549	663	661	779
with domestic institutions only	68	59	50	59	56	71	68	66	63	58	35	56	49	41	44	52
with international institutions	297	276	342	374	426	421	433	391	440	462	464	431	533	650	648	762
Poland																
Total articles	112	139	160	177	182	174	227	221	220	230	230	259	278	304	312	339
with multiple institutions	76	102	124	115	141	135	182	172	176	192	192	224	236	278	271	309
with domestic institutions only	43	49	52	69	49	43	59	60	62	49	46	51	54	39	56	44
with international institutions	69	90	108	108	133	131	168	161	158	181	184	208	224	265	256	295
Portugal																
Total articles	16	22	50	40	41	34	67	71	70	85	87	89	88	105	132	169
with multiple institutions	15	21	37	35	40	29	63	68	68	82	85	86	86	103	131	167
with domestic institutions only	2	3	18	9	2	7	9	5	3	4	5	10	10	5	11	11
with international institutions	14	19	32	31	39	27	58	66	67	81	82	79	78	100	121	158
Spain																
Total articles	366	386	485	384	575	537	523	559	591	623	679	730	902	1,057	1,010	1,179
with multiple institutions	298	321	390	338	499	479	471	511	542	562	633	668	823	1,019	981	1,128
with domestic institutions only	104	95	147	83	122	98	84	88	87	110	88	106	124	105	82	129
with international institutions	262	291	338	301	453	439	439	471	504	513	591	624	778	952	928	1,050
Sweden																
Total articles	132	108	106	116	144	173	152	151	163	152	154	199	216	324	274	312
with multiple institutions	110	83	87	94	124	139	127	129	139	135	143	180	202	310	261	300
with domestic institutions only	25	29	22	25	25	45	29	27	27	20	14	25	18	23	26	19
with international institutions	107	79	84	91	119	128	123	124	136	132	140	174	198	301	248	293
United Kingdom																
Total articles	1,005	1,058	1,130	1,151	1,355	1,493	1,526	1,442	1,532	1,650	1,639	1,719	1,951	2,040	2,086	2,261
with multiple institutions	776	798	895	879	1,114	1,199	1,219	1,189	1,257	1,387	1,397	1,473	1,701	1,812	1,859	2,047
with domestic institutions only	321	345	313	347	330	405	400	344	365	356	339	340	325	309	323	298
with international institutions	684	713	817	804	1,025	1,088	1,126	1,098	1,167	1,294	1,300	1,379	1,626	1,731	1,763	1,963

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S&E articles in astronomy, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Norway																
Total articles	27	34	32	25	31	25	40	42	49	45	46	44	58	45	51	80
with multiple institutions	25	33	26	21	28	22	36	42	47	40	41	39	53	44	46	76
with domestic institutions only	2	1	8	5	5	3	4	2	3	8	5	9	12	5	9	6
with international institutions	25	33	24	20	26	22	36	40	46	37	41	35	46	40	42	74
Russia																
Total articles	404	450	506	493	561	561	515	472	530	485	459	632	612	518	593	609
with multiple institutions	256	258	312	336	376	392	377	346	385	348	334	473	437	384	454	465
with domestic institutions only	178	239	239	196	232	227	199	175	204	188	174	232	238	207	202	218
with international institutions	226	211	267	297	329	334	316	297	326	297	285	400	374	311	391	391
Switzerland																
Total articles	132	130	147	153	150	204	263	256	317	267	326	287	376	414	433	458
with multiple institutions	110	115	122	131	125	154	232	227	283	245	302	266	356	396	407	444
with domestic institutions only	24	23	35	32	27	58	42	35	43	30	29	29	27	24	34	20
with international institutions	108	107	112	121	123	146	221	221	274	237	297	258	349	390	399	438
Iran																
Total articles	5	2	4	8	9	14	14	14	15	22	26	21	31	43	84	117
with multiple institutions	3	-	2	7	4	12	8	8	11	17	19	15	24	30	62	83
with domestic institutions only	3	2	2	4	8	10	9	9	9	17	14	13	18	25	51	74
with international institutions	2	-	2	4	1	4	5	5	6	5	12	8	13	18	33	43
Israel																
Total articles	87	65	103	112	109	134	126	119	126	134	119	158	166	152	183	245
with multiple institutions	65	52	82	84	89	108	106	102	101	108	92	120	132	117	158	202
with domestic institutions only	31	20	26	29	23	31	30	32	34	35	33	45	42	41	35	56
with international institutions	56	45	77	83	86	103	96	87	92	99	86	113	124	111	148	189
Saudi Arabia																
Total articles	-	-	6	4	2	4	10	3	5	-	3	2	2	4	20	52
with multiple institutions	-	-	1	4	-	4	5	3	2	-	1	1	2	2	18	51
with domestic institutions only	-	-	5	-	2	-	5	-	3	-	3	1	-	2	2	2
with international institutions	-	-	1	4	-	4	5	3	2	-	-	1	2	2	18	50
Turkey																
Total articles	25	17	15	13	34	23	40	40	52	65	67	45	59	62	73	99
with multiple institutions	17	12	10	9	26	17	31	31	29	53	47	32	47	47	58	74
with domestic institutions only	13	7	8	6	13	10	15	17	32	29	25	25	25	25	28	39
with international institutions	12	10	7	7	21	13	25	23	20	36	42	20	34	37	45	60
Egypt																
Total articles	3	11	11	8	7	16	11	12	18	8	14	13	15	18	19	34
with multiple institutions	2	8	6	6	5	9	6	8	12	6	8	4	9	9	15	29
with domestic institutions only	2	3	7	3	2	11	5	6	7	2	6	9	7	12	6	8
with international institutions	1	8	4	5	5	5	6	6	11	6	8	4	8	6	13	26

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S&E articles in astronomy, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
South Africa																
Total articles	71	78	71	68	76	101	80	76	87	88	104	114	131	132	175	224
with multiple institutions	58	67	56	52	63	79	59	65	76	76	94	103	118	115	162	214
with domestic institutions only	19	12	18	19	21	24	27	17	19	19	16	21	21	24	17	18
with international institutions	52	66	53	49	55	77	53	59	68	69	88	93	110	108	158	206
China																
Total articles	147	179	190	205	259	319	261	313	381	528	533	663	737	669	798	909
with multiple institutions	105	134	150	188	219	243	220	233	294	400	419	495	604	579	670	785
with domestic institutions only	88	97	109	100	137	175	110	141	181	283	280	336	360	296	399	406
with international institutions	59	82	81	105	122	144	151	172	200	245	253	327	377	373	399	503
India																
Total articles	169	164	200	169	248	229	194	173	221	270	239	344	326	344	400	487
with multiple institutions	101	102	107	105	158	127	129	125	160	187	185	248	241	259	273	364
with domestic institutions only	89	87	113	88	136	135	95	82	112	144	109	174	155	154	204	243
with international institutions	80	77	87	81	112	94	99	91	109	126	130	170	171	190	196	244
Japan																
Total articles	417	483	517	650	558	614	620	587	527	577	582	841	858	753	735	902
with multiple institutions	313	343	376	461	436	479	497	475	433	497	511	732	765	690	663	820
with domestic institutions only	218	275	294	384	259	267	279	265	222	224	200	296	284	223	234	265
with international institutions	199	208	223	266	299	347	341	322	305	353	382	545	574	530	501	637
Singapore																
Total articles	-	1	-	-	-	-	1	-	-	-	3	1	1	3	1	1
with multiple institutions	-	-	-	-	-	-	1	-	-	-	3	1	1	3	1	1
with domestic institutions only	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
with international institutions	-	-	-	-	-	-	1	-	-	-	3	1	1	3	1	1
South Korea																
Total articles	44	41	72	58	73	86	69	99	143	126	136	202	239	225	235	282
with multiple institutions	32	37	57	46	59	74	65	84	130	111	116	186	204	201	217	263
with domestic institutions only	15	14	25	21	23	30	18	22	24	30	33	40	54	35	47	46
with international institutions	29	27	47	37	50	56	51	77	119	96	103	162	185	190	188	236
Taiwan																
Total articles	16	15	36	29	47	34	45	65	51	70	116	122	155	168	176	237
with multiple institutions	13	14	35	26	40	27	41	56	46	67	111	112	145	163	167	229
with domestic institutions only	5	5	4	6	10	11	10	12	9	10	13	21	27	12	23	21
with international institutions	11	10	32	23	37	23	35	53	42	60	103	101	128	156	153	216
Australia																
Total articles	308	283	361	324	401	440	365	459	460	497	432	483	582	564	709	866
with multiple institutions	245	241	307	272	353	372	304	363	392	417	387	432	531	524	653	807
with domestic institutions only	85	68	82	76	76	85	88	120	97	112	79	74	70	76	80	112
with international institutions	223	215	279	248	325	355	277	339	363	385	353	409	512	488	629	754

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S&E articles in astronomy, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
New Zealand																
Total articles	12	22	24	21	19	31	21	30	27	23	13	19	31	36	37	62
with multiple institutions	8	21	17	15	14	28	18	25	24	18	12	17	28	31	32	52
with domestic institutions only	4	1	8	8	7	4	3	7	5	5	1	2	3	6	5	11
with international institutions	8	21	16	13	12	27	18	23	22	18	12	17	28	30	32	51

NOTES: Article counts are from the set of journals covered by the Science Citation Index (SCI) and Social Sciences Citation Index (SSCI). Articles are classified by the year they entered the database, rather than the year of publication, and are assigned to a country/economy on the basis of the institutional address(es) listed in the article. Articles are credited on a whole-count basis (i.e., each collaborating country/economy is credited with one count). Countries/economies with less than 1% of internationally coauthored articles in 2012 are omitted. Articles with multiple institutions are counts of articles with two or more institutional addresses. Articles with domestic institutions only are counts of articles with one or more institutional addresses all within the country/economy. Articles with international institutions are counts of articles with one or more institutional addresses outside the country/economy.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, and The Patent Board™, special tabulations (2013) from Thomson Reuters, SCI and SSCI, http://thomsonreuters.com/products_services/science/.

Science and Engineering Indicators 2014