

Table SPBS-4

S&E articles in astronomy and astrophysics, fractional count, by region, country, or economy: 1996–2020

(Number)

Region, country, or economy	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	8,374.00	9,845.00	8,522.00	8,116.00	8,811.00	9,728.00	10,117.00	10,779.00	11,579.00	12,832.00	14,944.00	12,541.00	12,089.00	12,822.00	12,408.00	13,377.00	14,510.00	13,511.00	13,931.00	14,171.00	14,375.00	14,254.00	14,084.00	14,767.00	14,507.00
North America	3,103.61	3,184.05	3,028.64	2,927.23	3,130.69	3,339.81	3,245.43	3,691.98	3,765.34	4,103.81	4,629.12	4,135.89	3,858.03	4,205.09	4,065.90	4,219.81	4,346.82	4,110.08	3,994.88	4,245.26	3,991.46	4,136.92	4,056.27	4,162.88	4,095.08
Canada	173.30	204.07	196.27	177.09	210.92	178.17	183.56	234.79	247.69	294.20	321.90	284.01	295.44	288.67	305.38	302.15	340.94	336.66	318.53	281.67	267.27	301.99	276.00	293.16	278.23
Greenland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.00	0.00	0.00	0.00
Mexico	64.97	71.81	89.63	82.83	103.69	131.68	134.52	181.55	109.16	141.66	144.32	165.55	144.30	140.44	131.30	231.29	120.91	123.32	156.99	138.85	130.51	138.77	134.15	150.17	134.89
United States	2,865.34	2,908.16	2,742.73	2,667.31	2,816.07	3,029.96	2,927.35	3,275.64	3,408.49	3,667.94	4,162.90	3,686.34	3,418.29	3,775.98	3,629.22	3,686.38	3,884.98	3,650.09	3,519.36	3,824.74	3,593.57	3,696.15	3,646.12	3,719.56	3,681.96
Central America and Caribbean	4.95	9.46	8.40	3.69	7.75	10.02	5.67	5.86	5.32	6.26	12.31	10.21	6.17	9.99	7.33	5.87	6.43	13.20	9.62	14.37	7.40	12.32	10.42	12.43	5.91
Antigua and Barbuda	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bahamas, The	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barbados	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.01	0.02	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Belize	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Costa Rica	0.50	1.25	0.00	0.50	1.00	0.50	0.00	0.00	1.00	0.00	0.00	0.25	0.00	0.89	0.87	0.00	2.07	3.33	1.93	1.93	2.17	1.67	3.21	0.50	2.54
Cuba	0.00	0.75	1.95	0.00	0.00	1.00	0.00	0.00	1.00	0.78	3.41	1.15	0.72	2.67	0.69	0.26	0.33	5.50	3.67	7.57	0.00	5.54	0.89	8.88	0.12
Dominica	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dominican Republic	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25
El Salvador	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grenada	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.17	0.00	0.25	0.00	0.00
Guatemala	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.35	0.11	0.25	0.00
Haiti	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Honduras	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.09	0.14	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jamaica	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.00
Nicaragua	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.11	0.14	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.20
Panama	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.01	0.17	0.15	0.00	0.00	0.50	0.00	0.13	0.00	0.00	0.00	0.00
Puerto Rico	4.45	7.46	6.20	3.12	6.75	8.52	5.57	5.86	3.13	5.28	7.42	8.23	5.14	6.02	5.09	4.94	3.91	4.20	3.52	4.63	4.59	4.19	5.29	3.03	1.55
Saint Kitts and Nevis	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Saint Lucia	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Saint Vincent and the Grenadines	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Trinidad and Tobago	0.00	0.00	0.25	0.00	0.00	0.00	0.10	0.00	0.19	0.21	1.48	0.58	0.13	0.13	0.26	0.33	0.00	0.00	0.00	0.00	0.81	0.03	0.00	0.00	1.04
South America	189.80	287.34	194.99	210.10	223.59	257.44	293.49	271.35	276.38	308.61	471.68	342.88	390.64	432.22	335.19	481.34	360.17	405.50	519.37	478.81	484.07	478.25	515.91	547.15	511.69
Argentina	40.69	67.50	46.49	59.12	52.44	75.65	86.15	68.90	67.33	70.24	97.73	71.48	91.48	87.87	84.65	119.86	75.31	84.00	92.74	86.65	95.74	94.73	98.95	95.88	104.49
Bolivia	0.51	0.21	0.00	1.20	0.00	0.00	0.00	0.22	0.09	0.00	0.32	0.00	0.08	0.03	0.00	1.08	0.25	0.00	0.33	0.00	0.18	0.05	0.00	0.00	0.00
Brazil	83.86	123.41	88.25	94.48	108.81	94.15	113.29	104.48	103.70	115.52	185.23	127.44	130.05	163.58	122.94	166.31	124.56	145.60	193.63	171.89	171.36	164.50	171.58	213.57	179.29
Chile	55.13	63.85	48.62	46.08	53.23	68.46	77.50	86.64	87.42	107.60	160.65	129.15	147.75	144.47	118.10	164.37	144.47	162.11	203.13	201.58	195.79	195.29	220.18	213.67	210.74
Colombia	2.53	4.63	1.00	0.00	0.11	1.75	2.00	1.46	4.20	1.00	3.13	0.33	7.51	4.27	2.24	6.12	4.80	7.52	15.09	10.39	12.52	13.47	13.03	13.92	10.15
Ecuador	0.25	0.20	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.00	0.60	0.00	0.50	0.07	0.00	1.00	1.43	0.00	0.42	1.30	0.18	4.19	3.32	1.85	2.62
Guyana	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.00	0.00	0.00	0.00

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Paraguay	0.50	0.33	0.27	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.04	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.12	0.00	0.00	0.00	0.06	0.00	0.11
Peru	0.00	0.00	0.19	0.10	0.00	0.20	0.45	1.22	1.25	1.00	1.14	1.00	1.65	0.00	0.10	5.40	0.71	0.67	0.14	0.83	0.36	3.02	0.13	3.00	2.05
Suriname	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.44	0.00	0.00	0.00	0.00
Uruguay	1.29	3.78	2.08	0.58	2.70	4.54	4.69	1.21	1.13	1.67	4.36	1.00	3.00	2.33	0.00	2.50	4.07	0.13	4.31	2.33	3.31	0.66	3.68	3.72	2.07
Venezuela	5.04	23.43	8.09	8.54	6.29	12.68	9.40	7.16	10.28	11.59	18.49	12.47	8.62	29.61	6.15	14.69	4.57	5.47	9.46	3.84	4.07	2.36	5.00	1.55	0.17
Europe	4,040.92	5,223.61	4,216.91	3,791.18	4,205.76	4,803.71	5,245.73	5,480.96	5,966.96	6,812.07	7,744.19	6,210.35	5,863.83	6,110.49	5,987.35	6,259.94	6,961.60	6,214.72	6,498.37	6,456.31	6,826.15	6,517.17	6,355.14	6,590.78	6,309.09
EU-27 and UK ^a	3,383.56	4,388.80	3,647.17	3,231.21	3,528.73	4,093.88	4,448.52	4,773.81	5,213.47	5,925.61	6,806.20	5,411.53	5,123.32	5,294.69	5,222.60	5,318.90	6,069.69	5,282.81	5,520.56	5,481.93	5,856.42	5,502.99	5,380.64	5,613.19	5,290.18
UK	684.82	821.04	740.08	667.94	699.22	772.43	899.67	982.37	1,021.22	1,063.92	1,304.79	1,090.82	874.11	975.67	975.45	1,036.28	1,041.81	927.04	999.50	1,098.79	1,114.51	1,097.51	1,084.75	1,105.98	1,077.44
EU-27 ^b	2,698.75	3,567.76	2,907.09	2,563.27	2,829.51	3,321.44	3,548.85	3,791.43	4,192.24	4,861.69	5,501.41	4,320.70	4,249.21	4,319.02	4,247.15	4,282.62	5,027.88	4,355.76	4,521.06	4,383.15	4,741.91	4,405.48	4,295.89	4,507.21	4,212.74
Austria	26.15	58.50	45.54	48.85	43.32	40.54	87.12	70.06	64.13	106.03	82.32	68.48	68.76	67.80	59.54	73.02	61.34	69.95	75.14	72.36	77.63	64.62	75.93	80.55	68.75
Belgium	75.06	90.93	77.63	51.87	68.32	89.85	105.59	108.14	134.78	149.66	157.91	131.17	131.02	136.83	125.12	133.88	141.24	145.47	157.02	131.94	142.21	118.45	118.45	162.12	132.66
Bulgaria	10.82	14.58	12.83	14.99	17.31	19.81	18.11	10.83	15.79	14.16	49.10	13.57	42.38	15.97	31.47	22.48	43.68	16.72	39.61	47.49	28.15	33.19	36.78	27.47	30.76
Croatia	1.77	2.24	3.46	4.84	6.78	4.94	8.79	7.60	9.38	6.87	12.75	12.72	7.07	5.89	6.34	15.53	12.45	8.19	11.64	9.66	9.31	15.99	16.19	7.09	6.73
Cyprus	0.00	0.00	0.00	0.00	0.00	0.00	0.45	1.12	0.11	0.59	2.18	0.08	0.15	1.14	0.17	0.25	1.12	1.24	0.38	1.17	1.31	0.84	0.88	0.45	0.55
Czechia	38.47	48.67	30.23	40.20	39.16	50.79	66.83	44.29	56.41	91.55	124.77	59.89	67.88	75.26	76.30	86.50	92.36	73.60	98.31	92.87	107.80	115.09	101.55	109.09	112.39
Denmark	38.84	69.51	57.83	45.59	54.18	41.76	59.07	70.52	68.66	71.16	84.78	51.61	45.82	44.81	53.16	62.38	78.66	56.62	70.32	72.15	69.36	74.18	81.98	97.47	79.39
Estonia	4.79	7.43	7.99	7.21	7.02	7.70	12.12	9.28	6.50	7.70	16.84	14.40	14.32	8.25	7.45	17.18	14.31	10.66	20.44	10.33	7.82	12.73	10.44	8.62	7.59
Finland	48.19	47.21	50.12	46.95	53.75	57.67	76.32	51.89	65.89	79.09	101.24	62.25	62.58	65.69	55.58	58.76	72.62	55.88	62.22	66.79	78.65	70.65	62.73	58.71	64.83
France	536.87	729.51	548.86	481.87	516.37	623.52	614.55	701.35	802.32	927.00	1,142.59	734.13	800.96	845.65	821.73	738.19	865.07	801.06	745.89	824.39	779.29	728.69	691.76	730.25	705.49
Germany	756.97	890.75	670.98	586.52	690.21	774.74	793.83	879.96	1,018.82	1,237.26	1,153.56	1,108.15	1,072.25	992.12	998.90	1,023.28	1,244.46	1,043.81	1,016.00	1,012.37	1,102.18	1,024.94	995.95	1,031.79	967.85
Greece	44.24	28.24	34.13	41.98	46.68	56.62	80.81	59.51	72.53	74.13	118.80	52.22	62.25	76.66	48.80	63.76	73.93	59.84	70.03	65.24	87.50	54.65	50.45	65.38	54.93
Hungary	20.25	18.17	17.95	19.89	24.13	21.15	37.16	32.89	41.94	27.11	46.13	51.87	35.79	51.27	36.03	37.29	48.88	60.91	60.37	48.28	61.69	57.64	58.91	85.64	68.45
Ireland	13.80	17.48	13.89	21.97	22.85	13.18	18.36	22.58	31.54	52.79	29.59	26.22	30.64	32.19	31.12	34.58	32.80	27.74	25.30	19.10	31.38	34.39	28.96	29.49	36.58
Italy	463.10	626.24	535.47	508.92	525.20	650.42	651.59	706.35	795.98	834.62	1,019.49	867.91	705.78	931.85	769.97	861.10	893.56	805.91	824.14	760.08	867.73	812.80	801.12	852.97	723.68
Latvia	2.50	7.54	5.00	1.02	1.58	2.00	0.00	4.70	0.50	3.16	0.60	0.58	1.31	2.71	2.95	6.99	5.09	3.41	2.37	4.22	2.51	7.02	2.10	2.89	6.14
Lithuania	3.33	11.77	13.10	5.33	5.52	6.62	13.65	24.39	6.74	15.87	11.56	9.15	18.45	10.67	11.03	8.23	11.18	12.51	14.85	9.35	9.45	6.41	12.42	19.80	13.07
Luxembourg	0.00	2.67	0.00	1.00	0.25	0.17	1.13	0.40	0.00	0.40	0.50	0.92	0.33	0.80	0.00	0.00	0.00	0.13	0.00	0.89	0.11	0.00	0.00	0.10	0.65
Malta	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.21	0.00	0.50	0.36	0.00	0.00	0.00	0.25	0.33	1.18	1.23	2.67	1.27	2.10	0.29	0.34	1.30
Netherlands	220.46	334.36	199.85	207.17	233.73	236.23	294.68	318.18	356.93	383.26	377.23	319.32	296.35	249.76	243.62	240.78	315.59	284.09	266.51	277.08	289.95	308.89	287.11	292.33	275.12
Poland	91.55	97.37	117.62	123.56	132.83	127.18	123.85	127.50	133.52	137.24	152.87	128.59	128.23	130.16	141.05	143.58	163.01	138.59	176.70	177.85	177.53	193.72	154.13	163.21	182.89
Portugal	6.43	11.81	26.49	11.75	18.90	20.64	21.90	29.87	35.05	30.25	46.76	32.96	49.01	38.20	33.05	38.87	68.82	44.58	51.96	40.90	47.37	35.49	46.46	38.61	45.08
Romania	3.35	10.03	2.91	3.35	4.82	3.50	11.40	6.81	12.32	6.58	12.93	6.30	9.74	7.59	9.69	16.38	13.71	7.23	10.84	13.22	11.65	6.29	9.02	21.93	15.24
Slovakia	15.08	17.28	12.08	6.14	8.06	13.75	39.17	28.36	25.16	21.67	19.73	21.88	39.36	29.05	29.64	44.57	43.16	30.22	44.23	38.72	23.29	30.38	17.14	31.72	34.88
Slovenia	3.07	2.33	1.67	0.36	3.07	1.34	4.14	4.24	6.23	8.73	4.53	3.38	4.88	2.27	4.42	3.56	5.07	6.87	2.87	3.69	5.54	4.09	4.31	4.79	5.37
Spain	202.96	327.48	355.24	223.77	232.20	363.52	326.97	383.74	347.49	446.60	577.32	440.01	445.77	414.91	528.70	431.21	617.00	485.84	574.82	452.83	595.11	448.62	493.03	427.64	437.05

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(Number)

Region, country, or economy	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	
Sweden	70.69	95.64	66.21	58.16	73.28	93.80	81.27	86.86	83.33	121.62	154.82	102.56	108.12	81.51	121.30	120.01	108.43	103.50	97.87	127.49	126.11	143.62	137.82	156.76	135.32	
Other Europe	657.36	834.81	569.75	559.97	677.03	709.83	797.20	707.16	753.49	886.45	937.99	798.83	740.51	815.79	764.75	941.04	891.90	931.92	977.82	974.38	969.73	1,014.18	974.50	977.59	1,018.90	
Other Europe, 2020 ^b	1,342.17	1,655.85	1,309.82	1,227.91	1,376.25	1,482.27	1,696.87	1,689.53	1,774.72	1,950.37	2,242.78	1,889.65	1,614.62	1,791.47	1,740.20	1,977.32	1,933.71	1,858.96	1,977.32	2,073.17	2,084.24	2,111.69	2,059.25	2,083.56	2,096.34	
Albania	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.50	0.00	0.00	0.67	0.00	0.67	0.00	0.00	1.50	2.90	0.50	0.50	0.00	0.00	
Andorra	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Belarus	1.33	0.00	0.00	0.00	0.50	0.00	0.67	1.00	4.98	0.00	0.58	2.10	0.76	0.67	0.00	3.00	1.21	0.00	1.00	0.33	1.14	1.08	1.78	0.31	1.07	
Bosnia and Herzegovina	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	2.55	0.00	0.00	0.16	0.00	0.00	0.03	
Holy See (Vatican City)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.38	0.00	0.00	1.03	0.26	0.00	0.00	0.08	0.14	0.03	0.12	0.31	0.40	0.41	
Iceland	0.38	0.67	0.38	0.11	1.94	0.70	1.64	0.76	2.73	4.21	2.72	5.99	1.87	1.25	0.78	3.40	3.50	3.46	2.08	1.16	1.53	1.61	2.51	6.59	5.41	
Kosovo	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.83	0.00	0.25	0.00	0.25	0.00	0.00	0.60	0.00	0.00	0.00	0.60	0.00	
Liechtenstein	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.80	0.00	0.00	0.00	0.00	
Moldova	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Monaco	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.00	0.08	0.01	0.00	
Montenegro ^c	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.17	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	1.00	
North Macedonia	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33	0.00	0.03	1.00	1.07	0.75	0.00	1.52	0.00	0.04	0.00	0.17	1.02	2.83	0.73	0.50	0.37	1.01	
Norway	25.91	35.41	16.74	13.64	22.69	19.78	18.46	26.28	29.10	61.98	35.39	45.33	27.61	28.00	17.63	35.30	25.26	35.25	19.62	39.48	43.64	31.66	24.81	30.20	33.98	
Russia	452.47	547.87	375.57	366.64	463.94	485.15	526.77	443.83	466.55	481.00	504.47	444.59	393.96	473.34	451.19	568.51	492.34	550.68	506.72	533.56	530.44	574.52	573.25	584.43	579.66	
San Marino	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Serbia ^c	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	29.40	47.42	31.69	38.35	36.68	44.03	21.47	76.66	32.65	33.27	23.35	35.60	34.33	40.82	
Serbia and Montenegro ^d	7.92	5.85	11.98	7.25	8.32	10.50	10.18	15.64	19.50	12.13	41.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Switzerland	61.96	114.12	89.34	82.98	77.18	91.54	117.81	118.02	155.76	182.91	188.94	172.19	131.68	153.74	145.36	151.86	158.02	161.36	158.63	176.55	171.42	210.47	164.84	155.54	179.00	
Turkey	16.49	18.21	9.44	6.53	13.32	22.14	21.45	27.01	29.40	48.86	70.22	40.41	42.22	43.68	43.24	51.38	68.10	65.89	63.91	57.80	63.89	61.24	54.57	51.50	60.47	
Ukraine	90.90	112.68	66.30	81.57	89.13	80.02	100.23	74.28	45.48	94.84	93.30	56.55	93.24	83.34	64.74	90.64	97.47	93.47	145.40	129.50	117.82	108.74	115.75	113.31	116.04	
Middle East	96.58	94.53	72.57	98.71	118.91	123.44	137.61	137.96	160.36	131.81	175.77	143.08	162.36	172.99	157.12	211.26	259.76	235.69	254.84	246.75	262.19	267.27	240.39	268.16	262.02	
Armenia	34.53	7.39	3.03	32.92	37.19	33.95	26.60	31.45	37.68	22.12	31.70	23.58	33.23	32.34	23.04	37.25	29.14	28.03	46.08	28.26	20.42	19.76	21.84	19.41	19.66	
Azerbaijan	0.50	2.13	2.50	0.00	2.00	4.21	5.67	1.25	3.25	1.92	4.25	5.95	3.96	1.50	4.15	1.75	4.79	4.78	4.00	7.50	4.00	8.15	1.50	6.08	5.42	
Bahrain	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33	0.25	0.33	0.00	0.00	0.00	0.25	
Gaza Strip ^e	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33	0.00	0.00	0.00	0.00	
Georgia	3.94	6.58	4.08	9.35	6.24	10.91	8.85	6.64	10.26	19.09	14.43	9.63	8.52	12.65	10.25	10.03	8.98	8.47	12.49	9.04	14.61	13.82	11.59	16.63	11.18	
Iran	3.58	4.07	5.63	1.63	6.21	9.25	12.75	14.12	15.06	10.60	28.75	17.68	21.37	27.51	27.29	64.10	89.96	80.93	73.11	68.63	67.50	75.28	64.84	65.60	69.17	
Iraq	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.60	1.86	2.97	0.56	0.78	2.75	2.52	0.53	
Israel	50.76	69.87	52.50	51.22	59.19	59.25	76.49	74.32	88.28	71.88	89.45	76.69	91.24	92.06	87.16	87.91	112.24	92.49	89.88	101.74	116.59	118.69	106.38	112.20	108.98	
Jordan	0.00	2.50	2.17	0.00	3.13	1.88	0.50	0.83	1.50	2.63	0.08	1.50	0.06	1.50	1.67	0.00	1.50	1.00	3.12	0.00	1.82	0.62	1.64	2.27	0.07	
Kuwait	0.00	0.33	0.17	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.33	1.21	1.03	0.25	0.13	0.00	0.00	0.00	0.41	0.46	0.46	1.01	0.18	0.60	0.00	
Lebanon	0.00	0.33	0.00	0.25	2.08	0.50	1.25	0.00	0.50	0.00	1.50	1.19	0.23	1.92	0.27	1.25	1.68	0.50	0.64	3.14	2.36	1.28	1.29	2.88	0.85	

Table SPBS-4

S&E articles in astronomy and astrophysics, fractional count, by region, country, or economy: 1996–2020

(Number)

Region, country, or economy	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Liberia	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Libya	0.00	0.89	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.50	0.00	0.00	0.00	1.25	0.00	0.14	0.00	0.00	0.00	0.00	0.00	0.17	0.00	0.00	0.00
Madagascar	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.43	1.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.75	0.17	0.17
Malawi	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10
Mali	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.33	1.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.00	0.00	0.00	0.00
Mauritania	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00
Mauritius	0.00	0.00	0.50	0.00	1.00	1.75	7.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.57	0.00	0.00	0.00	0.00	0.64	0.64	0.00	0.00	1.00	1.00
Morocco	1.03	1.12	0.00	0.09	2.09	0.45	1.67	1.00	3.18	3.93	5.61	0.20	2.80	0.75	3.00	1.25	2.04	1.01	0.33	1.44	2.90	3.58	2.82	4.71	1.34
Mozambique	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.17	0.00	0.00
Namibia	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.14	0.08	0.08	0.07	0.11	0.07	0.10	0.14	0.16	0.08	0.07	0.00	0.08	0.41	0.67	0.93
Niger	0.00	0.00	0.00	0.00	0.20	0.00	0.00	0.00	0.00	0.14	0.00	0.45	0.00	0.00	2.00	0.00	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nigeria	3.29	4.83	4.05	2.75	0.50	0.17	3.33	1.33	0.00	2.00	2.42	0.50	2.40	2.60	4.83	6.13	8.54	12.55	25.77	9.20	6.95	6.27	4.08	12.11	8.16
Rwanda	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.92	0.00	0.13	0.00	0.00	0.50	0.10	0.53	0.20
São Tomé and Príncipe	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Senegal	0.25	0.20	0.00	0.00	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.80	0.67	0.00	0.00	0.00	1.67	0.00	0.00	0.17	0.34	1.50	0.92	0.00	0.22
Seychelles	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sierra Leone	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Somalia	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
South Africa	33.63	38.05	37.25	34.44	34.86	32.31	39.06	40.52	29.87	35.48	48.01	45.63	31.53	40.75	53.09	50.57	64.38	64.13	75.85	86.46	82.54	92.13	87.68	97.34	86.83
South Sudan	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sudan	1.00	0.00	0.67	0.00	0.00	1.00	0.00	0.00	1.00	1.00	0.00	0.75	1.00	1.11	3.00	0.00	0.13	1.00	0.00	0.00	0.00	1.75	0.42	0.00	0.84
Tanzania	0.00	0.00	0.00	1.00	0.00	0.00	0.00	2.00	3.00	0.00	0.25	0.00	0.00	0.00	0.00	0.20	0.00	0.00	0.33	0.00	0.33	0.00	0.00	0.75	0.00
Togo	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tunisia	0.00	0.67	0.67	0.00	0.00	0.00	0.00	0.00	1.89	0.67	1.67	1.81	0.96	2.17	1.17	2.58	3.14	3.29	2.59	0.62	0.55	4.64	4.47	3.72	6.05
Uganda	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.08	0.00	0.14	0.07	1.10	0.13	0.00	0.25	0.00	1.08	0.00	0.17	1.46	1.53	2.96
Zambia	0.00	0.00	0.00	0.00	0.03	0.07	0.00	0.01	0.00	0.00	0.08	0.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.19	0.00	0.00
Zimbabwe	0.00	1.33	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	3.00	2.00	0.00
Asia	690.47	800.44	730.30	846.46	881.32	944.43	906.81	902.28	1,067.52	1,101.55	1,494.28	1,347.89	1,486.54	1,514.94	1,500.05	1,755.58	2,049.17	2,051.14	2,110.81	2,202.64	2,255.46	2,287.19	2,392.53	2,607.58	2,763.75
Afghanistan	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.17	0.00	0.33	0.00
Bangladesh	0.00	0.00	3.00	0.50	1.86	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.75	0.00	2.33	5.67	20.00	16.58	9.67	2.50	1.00	2.25	1.33	2.75
Bhutan	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Brunei	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Burma	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cambodia	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
China	174.11	181.24	184.50	180.39	215.94	248.36	248.39	236.81	319.10	356.68	525.60	479.04	503.47	539.55	554.54	592.36	828.81	807.81	824.48	916.63	947.52	931.71	1,062.72	1,187.69	1,314.65
India	143.32	144.48	121.71	135.49	156.46	157.59	170.44	151.38	131.31	155.40	236.95	186.76	226.69	232.13	263.56	320.59	327.50	330.54	385.50	387.77	380.33	400.13	408.73	440.96	472.32

Table SPBS-4

S&E articles in astronomy and astrophysics, fractional count, by region, country, or economy: 1996–2020

(Number)

Region, country, or economy	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Tonga	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tuvalu	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vanuatu	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unassigned	40.04	23.96	24.84	44.36	25.41	22.74	33.98	27.03	14.78	51.26	34.99	29.26	29.09	68.73	21.20	16.88	18.96	23.02	38.16	25.35	29.57	34.13	29.41	28.60	28.00

EU = European Union; UK = United Kingdom.

^a The UK was a part of the EU for data purposes from 1973 to 2019.^b Beginning in 2020, the UK was no longer a member of the EU.^c Beginning in 2006, Serbia and Montenegro represented individual countries.^d Serbia and Montenegro represented a single country for data purposes from 1992 to 2006.^e West Bank and Gaza Strip are separate entities in this list but are grouped in the World Bank Lending Groups classification list. Here, the economic status of the group is applied to both individual regions.**Note(s):**

Article counts refer to publications from a selection of conference proceedings and peer-reviewed journals in S&E fields from Scopus. Articles are classified by their year of publication and are assigned to a region, country, or economy on the basis of the institutional address(es) of the author(s) listed in the article. Articles are credited on a fractional count basis (i.e., for articles produced by authors from different countries, each country receives fractional credit on the basis of the proportion of its participating authors). Data are not directly comparable to *Science and Engineering Indicators 2020*; see the Technical Appendix for information on data filters. The sum of the fractional count for regions, countries, and economies may not add to the world total because of rounding. Some publications have incomplete address information for coauthored publications in the Scopus database. The Unassigned category count is the sum of fractional counts for publications that cannot be assigned to a region, country, or economy.

Source(s):

National Center for Science and Engineering Statistics; Science-Metrix; Elsevier, Scopus abstract and citation database, accessed May 2021.

Science and Engineering Indicators