

Appendix table 5-37

**S&E articles in physics, by region/country/economy: 1997–2011**

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
World	84,021.0	84,205.0	85,767.0	86,358.0	86,385.0	90,134.0	92,949.0	96,435.0	99,760.0	105,377.0	106,231.0	109,178.0	106,875.0	105,232.0	108,551.0
North America															
Canada	1,748.9	1,582.3	1,458.3	1,574.0	1,479.2	1,685.9	1,780.1	1,807.6	2,040.8	2,174.0	2,134.0	2,237.8	2,191.8	2,026.3	2,129.2
Mexico	499.0	610.3	657.5	633.4	707.7	676.5	778.5	731.5	817.4	803.1	787.0	767.6	726.0	681.9	742.6
United States	17,959.6	18,071.7	17,715.9	17,398.2	17,205.8	17,573.8	18,065.4	18,693.9	19,778.9	20,058.3	19,470.9	19,212.1	18,235.7	17,963.9	18,311.2
Central America/Caribbean															
Antigua and Barbuda	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bahamas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.3	0.0	0.0
Barbados	0.8	1.3	1.0	1.1	6.8	3.8	9.8	9.8	4.3	2.0	1.0	2.3	2.5	3.6	4.1
Belize	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Costa Rica	3.5	5.8	5.5	2.3	4.5	5.1	5.8	4.6	3.9	4.7	4.7	4.1	2.0	2.7	3.3
Cuba	32.8	36.9	38.2	57.4	43.2	39.1	48.2	34.5	50.2	46.3	36.8	40.0	35.5	22.8	26.2
Dominica	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0
Dominican Republic	1.0	0.0	0.0	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.3	0.3
El Salvador	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
Grenada	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Guatemala	0.5	0.0	0.5	0.0	0.3	0.0	0.0	0.0	0.3	0.3	0.2	0.3	0.3	0.2	0.3
Haiti	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8
Honduras	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.3	0.0	0.3	0.0	0.0	0.0
Jamaica	3.5	1.5	0.2	0.0	0.0	0.0	0.5	0.0	0.0	2.0	1.2	0.0	2.0	4.0	2.1
Nicaragua	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.1	0.0	0.0	0.0
Panama	1.0	0.0	2.2	0.7	1.0	0.0	2.0	0.3	0.2	0.0	0.5	0.0	0.8	1.0	0.0
St. Kitts and Nevis	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
St. Lucia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
St. Vincent	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Trinidad and Tobago	3.0	1.3	0.5	2.4	3.0	0.5	1.0	3.0	1.0	2.0	1.5	0.0	0.0	1.0	0.3
West Indies Associated States	0.0	0.0	1.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	1.0
South America															
Argentina	425.8	440.6	447.1	458.4	464.2	507.8	443.1	465.8	429.2	445.3	509.6	447.0	491.2	428.3	432.1
Bolivia	0.8	0.8	0.6	0.2	0.5	0.6	2.8	0.6	0.8	0.4	0.3	0.3	0.8	1.3	0.9
Brazil	1,007.6	1,199.5	1,252.7	1,210.3	1,512.2	1,491.4	1,460.3	1,862.1	1,649.6	1,712.4	1,769.4	1,681.4	1,513.0	1,461.9	1,460.9
Chile	77.9	104.6	92.4	87.4	94.9	151.3	107.4	132.2	144.6	190.2	165.9	171.0	180.7	195.1	199.9
Colombia	54.1	56.6	40.8	97.1	52.8	42.7	63.3	66.3	71.9	104.3	74.1	110.8	98.2	114.6	107.0
Ecuador	0.0	0.0 *	1.1	1.8	4.6	5.8	2.6	2.8	5.1	4.8	5.8	2.8	5.9	5.2	2.5
Guyana	1.0	0.0	0.5	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Paraguay	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5
Peru	5.8	1.2	3.3	8.2	7.8	5.1	10.3	5.8	8.7	5.5	14.1	5.2	7.7	7.2	3.7
Suriname	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0
Uruguay	13.3	18.4	21.2	21.4	25.4	18.7	24.9	23.1	24.3	18.2	25.5	25.3	26.6	23.4	19.2
Venezuela	58.6	99.1	81.4	73.9	75.3	76.4	119.4	51.4	78.7	133.4	56.2	64.6	40.5	49.7	38.3

Appendix table 5-37

**S&E articles in physics, by region/country/economy: 1997–2011**

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Europe															
European Union															
Austria	483.0	480.1	483.6	531.6	495.8	507.7	587.5	551.9	560.5	548.2	594.1	607.5	557.8	596.8	597.6
Belgium	672.1	665.8	723.9	710.8	734.5	798.9	861.0	855.7	854.1	850.8	846.0	856.0	801.2	767.4	815.3
Bulgaria	226.2	206.8	185.2	193.2	149.0	183.9	136.8	171.5	154.5	148.6	172.0	149.7	148.3	136.5	126.7
Cyprus	15.8	15.8	9.8	10.3	5.4	15.0	14.2	13.4	20.4	25.0	21.2	30.3	26.6	29.3	22.1
Czech Republic	368.0	380.3	447.9	441.9	435.8	514.4	435.0	598.6	495.9	585.9	526.4	556.2	548.9	578.7	546.3
Denmark	502.8	488.8	458.5	491.1	468.5	469.6	455.0	432.2	444.2	445.7	457.1	469.5	477.8	487.3	524.7
Estonia	54.6	64.4	60.5	58.8	75.6	57.4	59.1	64.1	63.7	67.1	87.1	76.5	69.6	73.2	68.7
Finland	387.4	386.9	384.5	408.0	435.7	437.0	480.7	486.4	464.6	509.4	524.9	535.4	534.3	475.6	511.5
France	5,188.3	5,001.5	5,162.9	5,250.4	5,006.0	5,171.8	4,988.6	5,076.9	5,046.7	5,476.5	5,139.0	5,358.0	5,125.1	4,910.9	5,049.4
Germany	7,502.1	7,789.7	7,426.7	7,285.6	7,082.1	7,351.5	7,024.2	7,105.6	7,212.9	7,441.5	7,160.2	7,181.6	7,151.9	7,026.8	7,291.6
Greece	354.0	359.1	396.2	414.4	445.7	465.0	428.2	451.3	472.1	560.0	619.7	558.7	555.4	490.8	472.3
Hungary	298.1	314.0	322.9	368.1	372.0	379.9	403.6	374.7	397.8	400.9	369.6	409.3	324.7	316.6	323.4
Ireland	122.7	147.5	149.1	155.6	166.9	172.2	168.7	241.9	251.9	278.3	279.4	316.0	313.1	339.1	385.0
Italy	3,281.9	3,327.2	3,340.4	3,523.6	3,451.7	3,895.1	3,867.8	4,284.1	3,934.9	4,053.2	4,040.5	3,937.7	3,506.1	3,521.3	3,365.3
Latvia	48.7	49.9	46.9	40.8	56.9	50.9	34.7	50.0	41.9	41.9	30.3	43.1	42.5	42.5	51.4
Lithuania	93.9	85.1	90.2	71.1	87.3	90.6	77.4	140.3	153.9	191.4	120.3	158.5	131.0	99.7	175.9
Luxembourg	0.3	0.0	2.2	0.6	1.6	2.5	3.3	8.0	2.4	3.8	2.0	10.9	13.9	15.2	25.6
Malta	0.8	0.0	0.0	1.0	0.0	1.5	0.0	1.3	4.0	1.0	2.6	7.0	4.3	1.5	6.2
Netherlands	1,177.1	1,184.4	1,126.9	1,141.8	1,107.1	1,230.9	1,144.4	1,239.8	1,156.2	1,156.5	1,076.7	1,086.5	1,037.6	1,014.1	1,123.0
Poland	1,340.9	1,270.1	1,392.5	1,544.6	1,481.6	1,565.4	1,779.4	1,708.2	1,676.4	1,854.3	1,630.6	1,871.0	1,653.2	1,622.3	1,649.5
Portugal	203.1	226.9	336.2	311.6	368.9	367.3	418.7	429.2	409.3	493.4	495.8	536.8	486.3	492.5	497.2
Romania	277.9	260.9	296.8	305.4	281.5	286.0	275.5	286.7	253.9	304.0	322.9	368.1	360.0	354.4	365.1
Slovakia	174.4	161.2	143.9	158.7	148.1	213.4	192.0	233.1	142.9	189.9	170.1	231.8	163.8	209.2	160.8
Slovenia	116.1	120.0	147.2	146.9	146.5	146.7	189.8	146.8	184.2	201.7	211.6	214.8	199.7	193.1	216.2
Spain	1,676.5	1,706.4	1,853.8	1,753.4	1,834.4	1,893.2	1,925.6	2,125.2	2,166.5	2,304.4	2,474.2	2,397.9	2,414.6	2,343.8	2,411.6
Sweden	985.1	963.9	1,007.8	1,026.3	1,088.5	1,099.6	985.5	1,044.4	1,022.4	1,013.2	970.8	913.4	878.4	876.0	944.9
United Kingdom	4,661.5	4,407.6	4,810.5	4,673.4	4,249.6	4,366.8	4,382.2	4,418.4	4,528.6	4,632.0	4,576.4	4,561.2	4,414.8	4,259.9	4,342.4
Other Europe															
Albania	1.1	0.5	1.0	0.0	0.0	0.0	1.0	0.7	1.3	1.6	1.9	1.0	2.1	0.6	0.0
Andorra	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Belarus	268.7	256.7	241.5	224.0	212.1	200.9	230.6	193.5	229.0	182.4	192.5	169.7	172.8	145.1	158.7
Bosnia and Herzegovina	3.9	3.4	1.5	1.2	2.2	2.0	3.7	1.2	5.0	4.7	5.4	7.2	8.1	6.8	6.2
Croatia	77.1	78.3	86.7	69.4	81.6	99.3	99.0	119.5	117.0	94.4	118.6	104.5	105.3	95.8	104.5
Iceland	6.3	11.9	13.3	8.7	10.6	14.1	12.6	10.7	12.1	11.8	12.4	16.8	25.9	26.2	25.0
Kosovo	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Liechtenstein	0.5	0.3	2.6	1.4	0.8	1.0	4.3	3.4	0.8	0.8	1.6	1.9	2.3	1.1	0.9
Macedonia	7.7	8.0	4.7	9.2	8.9	13.3	11.2	13.5	9.3	8.2	10.4	13.6	11.2	17.1	14.9
Moldova	59.6	50.8	48.0	41.9	29.9	37.2	44.8	28.3	46.2	37.5	34.6	37.3	34.8	30.9	37.5
Monaco	0.0	0.0	0.0	0.7	0.0	0.5	1.0	0.0	1.0	0.8	1.3	0.0	0.8	0.3	1.3
Montenegro	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.4	4.9	5.5	2.1	4.3	3.5



Appendix table 5-37

**S&E articles in physics, by region/country/economy: 1997-2011**

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Eritrea	0.0	0.0	0.0	1.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.0	0.0
Ethiopia	0.7	3.5	3.8	1.5	4.8	3.0	1.0	4.2	3.3	5.2	11.4	11.5	6.5	2.9	9.1
Gabon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	1.0	0.3	0.3	0.2	1.4
Gambia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ghana	1.8	0.5	1.8	4.3	2.3	2.0	5.2	2.6	2.8	0.5	2.8	0.7	1.7	2.5	1.0
Guinea	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0
Guinea-Bissau	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Kenya	2.0	2.0	1.5	1.3	1.8	2.2	2.1	2.3	1.9	1.3	1.5	1.6	2.7	3.1	5.7
Lesotho	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.5	2.5	0.0	0.5	1.0	0.0	0.0
Liberia	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0
Libya	2.2	0.2	0.5	1.8	1.1	3.2	1.0	1.5	0.5	2.0	1.3	4.5	1.5	1.9	2.8
Madagascar	0.0	0.5	0.5	0.0	0.5	0.6	1.5	0.2	1.0	1.7	2.3	1.0	1.1	0.9	1.5
Malawi	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.1	0.0	0.0	0.2	0.2	0.0	1.2
Mali	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.3	0.3	0.0	0.3	0.0	0.0	0.0
Mauritania	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mauritius	0.0	0.0	0.0	0.3	0.3	0.5	0.0	0.0	1.5	2.0	2.0	2.0	3.5	2.5	0.8
Morocco	75.5	81.7	106.2	127.6	99.4	107.9	92.2	88.1	135.2	82.8	69.5	83.5	73.3	62.7	82.2
Mozambique	0.3	0.0	0.0	0.5	0.0	0.0	0.5	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0
Namibia	1.2	0.0	0.0	1.0	0.0	3.5	0.5	1.3	2.0	0.6	0.4	0.1	0.5	1.0	0.4
Niger	0.0	0.0	0.0	0.0	0.0	1.5	2.0	0.3	1.3	0.3	0.5	0.5	0.5	0.0	0.8
Nigeria	5.6	9.7	16.5	5.0	8.0	14.0	11.3	10.6	15.2	14.1	8.6	15.8	13.6	20.7	14.3
Rwanda	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	1.2	0.2	0.3
São Tomé and Príncipe	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Senegal	0.6	3.2	1.3	1.3	2.8	2.7	4.7	1.3	6.3	2.1	3.9	4.1	3.3	6.3	6.9
Senegambia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Seychelles	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.0	0.0	0.0	0.0	0.0	0.0
Sierra Leone	0.0	0.0	0.0	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Somalia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
South Africa	136.1	164.9	185.4	140.9	157.0	138.4	119.9	135.3	140.6	167.9	170.6	160.8	210.6	183.2	232.2
Sudan	2.7	2.5	1.1	1.3	1.4	4.0	0.0	3.7	1.0	1.2	0.2	3.8	1.6	5.2	4.8
Swaziland	0.0	0.0	0.5	0.3	0.8	1.5	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.7	1.0
Tanzania	0.3	0.5	2.0	0.0	0.5	2.3	2.0	0.0	0.2	1.0	0.0	0.6	2.3	1.3	0.8
Togo	0.0	0.0	0.0	1.0	0.5	0.5	0.3	0.5	0.0	0.3	0.0	0.3	0.7	0.6	0.0
Tunisia	33.6	36.8	46.7	41.4	55.8	56.3	63.3	67.7	94.6	86.5	87.1	112.3	100.6	99.5	100.2
Uganda	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.3	0.0	0.0	0.2	0.5	0.0	1.2	0.5
Zambia	0.0	0.7	2.0	1.0	0.0	2.3	0.3	0.0	0.3	0.5	0.3	1.0	1.2	0.5	1.0
Zimbabwe	2.3	2.8	1.0	2.0	0.5	2.0	2.0	0.5	0.3	2.8	1.0	1.1	1.8	2.0	2.5
Asia															
Afghanistan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0
Armenia	88.0	94.6	72.2	92.1	85.6	89.5	98.1	96.8	87.6	78.2	78.8	94.4	77.1	91.7	95.5
Azerbaijan	27.9	39.4	28.5	25.4	21.7	35.1	47.6	39.4	36.2	39.7	32.5	38.4	54.8	43.8	61.8
Bangladesh	14.9	24.5	24.1	22.5	26.4	25.6	35.6	26.2	28.8	28.6	37.0	50.1	42.6	46.9	54.5



## Appendix table 5-37

**S&E articles in physics, by region/country/economy: 1997–2011**

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Tonga	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tuvalu	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Vanuatu	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

\* = rounds to zero. NA = not available; country did not exist as such.

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 their year of publication and are assigned to a region/country/economy on the basis of the institutional address(es) listed in the article. Articles are credited on a fractional-count basis (i.e., for articles with collaborating institutions from multiple countries/economies, each country/economy receives fractional credit on the basis of the proportion of its participating institutions). Detail may not add to total because of rounding.

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/](http://thomsonreuters.com/products_services/science/).

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