

Journal Citation Studies. XIV. Wherein  
We Observe that Physicists Cite Different  
Physics Journals than Other People

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Recently Inhaber published an evaluation of physics journals.<sup>1</sup> He listed the top 24 physics journals in terms of total citations from all journals. He also listed the top two dozen by impact factor. Then he listed the top 24 by immediacy. However, due to repetition of titles in the three categories, only 41 different journals turned up on the three lists.

In ranking physics journals by these three measures, Inhaber used *ISI's Journal Citation Reports™ (JCR™)*, based on the *Science Citation Index® (SCI®)* data bank. In short, the universe was the entire scientific literature.

His article stimulated me to find out what would happen if the data base were restricted to physics journals alone. In other words, I asked not "What are the most cited physics journals?" but "What are the journals most cited by physics journals?"

The journals used as the data base for this report are the 188 journals categorized as either *Physics* or *Nuclear Science and Technology* in the 1969 *SCI*.<sup>2</sup> The latter category was included because about a third of its titles were already classified as *Physics*, and because it is difficult to think of the physics of the past three decades without including nuclear science.

Besides supplying information that should be of interest to many readers, the tables which follow provide further good examples of the sociometric utility of the *SCI* data base.

Figure 1 shows the top 50 journals most cited by the 188 physics journals selected. Except for the 'big three'--*Physical Review*, *Journal of Chemical Physics*, and *Physical Review Letters*--the rank of journals differs considerably from a list based on total citations from all science journals. The list also includes eight journals not categorized as physics journals in the data base. It was not possible for Inhaber to pick these, since his selection was primarily based on the names of journals rather than what cited them.

Figure 2 shows the result of a different approach. It lists the top 50 physics journals ranked by percentage of citation accounted for by the 188 physics journals. The journals on this list can surely be viewed as the physicist's physics journals.

Each figure gives for each journal the frequency of citations by the 188 physics journals, the number of self citations and its percentage in terms of the former, total citations by all journals processed for the *SCI*, percentage of 'physical' citations in terms

		'Physical' Citations	Self- Citations	Self- Citation Rate (B/A)	Total Citations	'Physical' Citation Rate (A/D)	Number of Physics Journals Citing	Impact Factor
	Journal	A	B		D			
1.	Phys. Rev.	74224	17808	24.0	82664	89.8	113	3.679
2.	J. Chem. Phys.	27256	14396	52.8	54748	49.8	87	3.180
3.	Phys. Rev. Lett.	23792	2432	10.2	26176	90.9	77	5.114
4.	Nucl. Phys.	15544	6012	38.7	16044	96.8	46	0.858
5.	Sov. Phys. JETP	15196	4564	30.0	16852	90.2	63	3.944
6.	Phys. Lett.	14320	1568	10.9	15740	91.0	57	1.654
7.	J. Appl. Phys.	12828	3364	26.2	21096	60.8	81	1.936
8.	Sov. Phys. Sol. St.	9612	4456	46.4	10420	92.2	38	2.046
9.	Nuovo Cimento	8692	1848	21.3	9768	89.0	42	0.527
10.	P. Roy. Soc. Lond.	7228	412	5.7	19156	37.7	91	2.998
11.	J. Physics	7196	1532	21.2	12724	56.6	68	1.405
12.	Zschr. Physik	5556	760	13.7	7036	79.0	74	1.536
13.	J. Phys. Soc. Japan	5236	1308	25.0	6932	75.5	58	1.045
*14.	J. Amer. Chem. Soc.	5044	—	—	105228	4.8	40	5.859
15.	Acta Cryst.	4748	2788	58.7	11588	41.0	34	2.469
16.	Philosophical Mag.	4616	644	14.0	7696	60.0	63	2.251
17.	Rev. Mod. Phys.	4232	20	0.5	5412	78.2	65	4.508
18.	J. Phys. Chem. Sol.	4092	276	6.7	5676	72.1	47	2.073
19.	Phys. Stat. Sol.	4056	1960	48.3	5252	77.2	39	1.578
20.	Comptes Rendus	3928	1752	44.6	21888	17.9	49	0.780
21.	Phys. Fluids	3556	1224	34.4	5176	68.7	33	1.581
22.	Ann Physics	3368	144	4.3	4384	76.8	56	3.188
23.	Canad. J. Phys.	3312	596	18.0	5292	62.6	54	2.186
*24.	J. Phys. Chem.	3240	—	—	18712	17.3	32	2.429
25.	Opt. Spectr. USSR	3096	1832	59.2	4200	73.7	25	1.331
26.	Appl. Phys. Lett	3092	576	18.6	5272	58.6	34	3.688
27.	J. Math. Phys.	3056	876	28.7	3792	80.5	42	0.492
28.	B. Amer. Phys. Soc.	3016	324	10.7	3532	85.4	34	0.156
29.	Physica	3016	552	18.3	3796	79.5	53	1.755
30.	Prog. Theor. Phys.	2956	1312	44.4	3348	88.3	31	1.513
31.	T. Faraday Soc.	2908	1056	36.3	11644	25.0	30	2.149
32.	Nucl. Instr. Meth.	2752	1468	53.3	3276	84.0	29	1.016
33.	JETP Lett.	2748	920	33.5	3024	90.9	22	2.240
34.	Sov. Phys. Tech. Phys.	2728	1524	55.9	3648	74.8	26	1.322
35.	Sov. J. Nucl. Phys.	2712	1852	68.3	2936	92.4	14	2.054
*36.	J. Chem. Soc.	2516	—	—	55912	4.5	24	3.123
37.	J. Opt. Soc. Amer.	2464	1016	41.2	6316	39.0	35	0.962
*38.	Nature	2452	—	—	61240	4.0	66	2.244
39.	Zschr. Naturforsch.	2452	1228	50.1	8716	28.1	47	1.433
*40.	Astrophys. J.	2260	—	—	17032	13.3	28	4.972
*41.	Dokl. Akad. Nauk USSR	2068	—	—	12404	16.7	42	0.572
*42.	Rev. Sci. Instr.	1928	—	—	4892	39.4	39	0.868
*43.	Acta Metallurg.	1804	—	—	5216	26.9	24	2.278
44.	Nucl. Sci. Eng.	1784	660	37.0	1940	92.0	15	1.290
45.	Sov. Phys. Usp.	1716	412	24.0	2536	67.7	19	4.930
46.	J. Fluid Mech.	1612	972	60.3	3848	41.9	20	2.376
47.	J. Polym. Sci.	1528	1016	66.5	11572	13.2	7	1.039
48.	Sov. Phys. Semicond.	1436	1012	70.5	1548	92.8	13	1.741
49.	Izv. Akad Nauk Fiz.	1404	560	39.9	1800	78.0	17	0.807
50.	J. Inorg. Nucl. Chem.	1380	836	60.6	5540	24.9	17	1.535

Figure 1. Fifty journals most frequently cited by 188 physics journals. Figures in columns A, B, and D are an annual extrapolation from a quarterly sample (see reference 3). An asterisk indicates that the journal is not one of the 188 used as the data base for this study.

		'Physical' Citations	Self- Citations	Self- Citation Rate (B/A)	Total Citations	'Physical' Citation Rate (A/D)	Number of Physics Journals Citing	Impact Factor
	Journal	A	B		D			
1.	Nucl. Phys (4)	15544	6012	38.7	16044	96.8	46	0.858
2.	Sov. Phys. Semicond. (48)	1436	1012	70.5	1548	92.8	13	1.741
3.	T. Amer. Nucl. Soc. (56)	1168	884	75.7	1260	92.7	9	0.388
4.	Sov. J. Nucl. Phys. (35)	2712	1852	68.3	2936	92.4	14	2.054
5.	Sov. Phys. Sol. St. (8)	9612	4456	46.4	10420	92.2	38	2.046
6.	Nucl. Sci. Eng. (44)	1784	660	37.0	1940	92.0	15	1.290
7.	Phys. Lett. (6)	14320	1568	10.9	15740	91.0	57	1.654
8.	Phys. Rev. Lett. (3)	23792	2432	10.2	26176	90.9	77	5.114
9.	JETP Lett. (33)	2748	920	33.5	3024	90.9	22	2.240
10.	Sov. Phys. JETP (5)	15196	4564	30.0	16852	90.2	63	3.944
11.	Phys. Rev. (1)	74224	17808	24.0	82664	89.8	113	3.679
12.	Nuovo Cimento (9)	8692	1848	21.3	9768	89.0	42	0.527
13.	Prog. Theor. Phys. (30)	2956	1312	44.4	3348	88.3	31	1.513
14.	B. Amer. Phys. Soc. (28)	3016	324	10.7	3532	85.4	34	0.156
15.	Nucl. Instr. Meth. (32)	2752	1468	53.3	3276	84.0	29	1.016
16.	J. Math. Phys. (27)	3056	876	28.7	3792	80.5	42	0.492
17.	Phys. Kondens. Mater. (101)	348	128	36.8	436	79.8	8	2.580
18.	Sol. St. Comm. (55)	1168	264	22.6	1468	79.6	20	1.189
19.	Physica (29)	3016	552	18.3	3796	79.5	53	1.755
20.	Zschr. Physik (12)	5556	760	13.7	7036	79.0	74	1.536
21.	Rev. Mod. Phys. (17)	4232	20	0.5	5412	78.2	65	4.508
22.	Izv. Akad. Nauk. Fiz (49)	1404	560	39.9	1800	78.0	17	0.807
23.	Ann. Rev. Nucl. Sci. (91)	480	116	24.2	616	77.9	12	5.629
24.	Phys. Stat. Sol. (19)	4056	1960	48.3	5252	77.2	39	1.578
25.	Ann. Physics (22)	3368	144	4.3	4384	76.8	56	3.188
26.	Helv. Phys. Acta (65)	932	40	4.3	1216	76.6	31	0.559
27.	J. Phys. Soc. Japan (13)	5236	1308	25.0	6932	75.5	58	1.045
28.	Sov. Phys. Tech. Phys. (34)	2728	1524	55.9	3648	74.8	26	1.322
29.	Opt. Spectr USSR (25)	3096	1832	59.2	4200	73.7	25	1.331
30.	IEEE T. Nucl. Sci. (73)	736	256	34.8	1016	72.4	9	0.722
31.	J. Phys. Chem. Sol. (18)	4092	276	6.7	5676	72.1	47	2.073
32.	Sol. St. Phys. (64)	992			1388	71.5	24	16.285
33.	Ark. Fiz. (53)	1172	384	32.7	1660	70.6	19	0.993
34.	Surface Sci. (61)	1104	584	52.9	1592	69.3	16	2.982
35.	J. Nucl. Mater. (66)	908	536	59.0	1312	69.2	8	1.398
36.	Phys. Fluids (21)	3556	1224	34.4	5176	68.7	33	1.581
37.	Sov. Phys. USP (45)	1716	412	24.0	2536	67.7	19	4.930
38.	Adv. Phys. (70)	786	0		1168	67.3	19	3.857
39.	Phys. Metal. Met. USSR (51)	1236	640	51.8	1912	64.6	13	0.872
40.	Canad. J. Phys. (23)	3312	596	18.0	5292	62.6	54	2.186
41.	J. Appl. Phys. (7)	12828	3364	26.2	21096	60.8	81	1.936
42.	Comm. Math. Phys. (97)	448	344	76.8	744	60.2	10	7.593
43.	Philosophical Mag. (16)	4616	644	14.0	7696	60.0	63	2.251
44.	Sov. Phys. Cryst. (60)	1108	588	53.1	1872	59.2	14	1.339
45.	Appl. Phys. Lett (26)	3092	576	18.6	5272	58.6	34	3.688
46.	J. Physics (11)	7196	1532	21.2	12724	56.6	68	1.405
47.	Zschr. Angew. Phys. (75)	716	256	35.8	1276	56.1	12	0.817
48.	Amer. J. Phys. (96)	452	276	61.1	840	53.8	8	0.298
49.	IEEE J. Quant. Elect. (80)	664	244	36.7	1284	51.7	12	1.303
50.	J. Physique (74)	724	184	25.4	1412	51.3	19	0.391

Figure 2. Fifty journals ranked by percentage of citations from 188 physics journals. Figures in columns A, B and D are an annual extrapolation from a quarterly sample (see reference 3). The number in parentheses after the journal title abbreviation indicates the rank of that journal in the list in Figure 1.

of total citations, number of the 188 journals that cited each title, and the overall impact reported previously.<sup>3</sup>

While it may seem obvious to some, the harried librarian may find it useful to know that the journals listed in the figures are used primarily or heavily by physicists, whether or not they contain the word *physics* in their titles, and whether or not they may be otherwise classified in this or that compendium of scientific journals. Even considering this purely algorithmic selection, those who know how hard journal selection can be after the obvious candidates have been dealt with may not, after all, regard the exercise as trivial. In our continuing evaluation of *Current Contents*<sup>®</sup> coverage, for example, we must ask ourselves whether (whatever its editors may claim) a journal belongs in the *Physical & Chemical Sciences* edition of *CC*<sup>®</sup>. If we find in a study like this one that only 18 or 20% of its perhaps impressive

total citations come from physics and chemistry journals we may have to put it in another *CC* edition.

I am delighted, in view of my many adverse criticisms of the quality of much Soviet scientific literature, to point out that Soviet physics journals rank high in these lists. I must point out as well, however, that high rank in these lists is no absolute measure of quality, and like all such lists, they must be used judiciously. They do not, and never will, tell the whole story. For example, *Physics Today* is nowhere evident, but Chen has shown that it is among the top ten journals scanned weekly by physicists.<sup>4</sup> Similarly, she reported that *Science* and *Nature* ranked 7th and 13th respectively in "importance" to physicists. *Nature* does appear as item 38 in Figure 1, and *Science* would have appeared as item 69 if we had extended the list to include 100 journals.

1. Inhaber, H. Is there a pecking order in physics journals? *Physics Today* 27(5): 39-43, May 74.

2. *Science Citation Index 1969 Guide & Journal Lists* (Philadelphia: Institute for Scientific Information, 1970), p. 8-9.

3. Garfield, E. Citation analysis as a tool in journal evaluation. *Science* 178:471-79, 1972.

4. Chen, C.C. How do scientists meet their information needs? *Special Libraries* 65 (7):272-80, July 1974.