

The 1973 Papers Most Cited in 1973

February 16, 1976

Number 7

In October 1973 we published a list of papers published in 1972 that had been most heavily cited in 1972.¹ Through oversight we failed to publish a follow-up for 1973 papers. So we recently obtained the data for such a compilation and will shortly follow-up with lists for 1974 and 1975.

Let me recapitulate a major shortcoming of these lists, which we also hope to rectify in the near future. A paper published in January 1973 obviously had a much greater chance of being cited in 1973 than one published in December. Since we know that a citation frequency in excess of one citation per month is significant by its rarity, we should look for all papers in our files cited 12 times within one year of publication. Please understand the difficulties in doing this. Also consider the unreliable dates on so many journal covers. The safest course of action is to use two consecutive years, as we have done in our computation of journal impact. The people in our computer department shudder each time I ask for yet another 'simple' merger of

annual *Science Citation Index*[®] (*SCI*[®]) files, but we do wish to do justice to all authors. Certainly no one should be penalized for publishing a paper in December, our readers least of all.

All heavily cited papers will eventually come out in *ISI*[®] compilations, but it would be nice to provide a running account of new research areas by picking up new highly cited works on a quarterly basis.

One factor which adds to the complexity of this problem is the discovery in our 1974 data that a paper published in 1874 was cited 14 times in 1974.² This might have had great significance in indicating a possible increase of activity in that field. So at any time, one of your papers may be rediscovered and heavily cited. This is a rare anomaly that we must watch out for.

If there is anything peculiar about the 1973 list, it is the increase of papers in physical science. Out of the 34 listed that were cited 14 times or more, 21 were in physics, astronomy, or chemistry. In 1972, only 11 out of 25 were in these fields.

1973 Articles Most Cited in 1973

A = times cited in 1973. B = times cited in 1974.

C = times cited in 1975. D = times cited 1973-1975.

The number given for 1975 is an extrapolation from the first 9 months of the year.

A	B	C	D	Bibliographic Data
1.	37	80	59 176	Amaldi U., Biancastelli R, Bosio C, Matthiae G, Allaby J V, Bartel W, Cocconi G, Diddens A N, Dobinson R W & Wetherell A M. Energy-dependence of proton-proton total cross section for center-of-mass energies between 23 and 53 GEV. <i>Physics Letters B</i> 44(1):112, 1973.
2.	32	48	22 102	Kim S H, Quigley G J, Suddath F L, McPherson A, Sneden D, Kim J J, Weinzierl J, Rich A. 3-Dimensional structure of yeast phenylalanine transfer-RNA; folding of polynucleotide chain. <i>Science</i> 179(4070):285, 1973.
3.	31	77	46 154	Amendolia S R, Bellettini G, Braccini P L, Bradaschia C, Castaldi R, Cavasinni V, Cerri C, Del Prete T, Foa L, Giromini P, Laurelli P, Menzione A, Ristori L, Sanguinetti G, Valdata M, Finocchiaro G, Grannis P, Green D, Mustard R & Thun R. Measurement of total proton-proton cross-section at the ISR. <i>Physics Letters B</i> 44(1):119, 1973.
4.	23	4	1 28	Vinogradov A P. Preliminary data on lunar soil collected by Luna-20 unmanned spacecraft. <i>Geochim. Cosmochim. Acta</i> 37(4):721, 1973.
5.	22	14	8 44	Devries R M, Kubo K I. Recoil effects in single-nucleon-transfer heavy-ion reactions. <i>Phys. Rev. Letters</i> 30(8):325, 1973.
6.	22	60	48 130	Wybran J, Chantler S, Fudenberg H H. Isolation of normal T cells in chronic lymphatic leukemia. <i>Lancet</i> I(7795):126, 1973.
7.	21	32	21 74	Amaldi U, Biancastelli R, Bosio C, Matthiae G, Allaby J V, Bartel W, Block M M, Cocconi G, Diddens A N, Dobinson R W, Litt J & Wetherell A M. Measurements of proton-proton total cross-section by means of coulomb scattering at CERN intersecting storage rings. <i>Physics Letters B</i> 43(3):231, 1973.
8.	20	27	16 63	Webb R A, Greytak T J, Johnson R T, Wheatley J C. Observation of a second-order phase-transition and its associated P - T phase-diagram in liquid HE-3. <i>Phys. Rev. Letters</i> 30(6):210, 1973.
9.	19	25	26 70	Davidson K, Ostriker J P. Neutron-star accretion in a stellar wind; model for a pulsed X-ray source. <i>Astrophys. J.</i> 179(2):585, 1973.
10.	19	74	66 159	Schally A V, Arimura A J. Hypothalamic regulatory hormones. <i>Science</i> 179(4071):341, 1973.
11.	18	28	23 69	Bjorken J D, Smith C H L. Spontaneously broken gauge theories of weak interactions and heavy leptons. <i>Phys. Rev. D.</i> 7(3):887, 1973.
12.	18	42	17 77	Harari H, Rabinovici E. 2 Component description for production of hadronic multiparticle final-states. <i>Physics Letters B</i> 43(1):49, 1973.
13.	18	23	26 67	Miller G, Niederman J C, Andrews L L. Prolonged oropharyngeal excretion of Epstein-Barr virus after infectious mononucleosis. <i>New Engl. J. Med.</i> 288(5):229, 1973.
14.	18	38	20 76	Slattery P. Evidence for systematic behavior of charged-prong multiplicity distributions in high-energy proton-proton collisions. <i>Phys. Rev. D.</i> 7(7):2073, 1973.
15.	17	8	4 29	Bhalla C P, Hein M. Theoretical K-shell fluorescence yield of multiply ionized neon. <i>Phys. Rev. Letters</i> 30(2):39, 1973.

16. 16 35 21 72 **Fialkowski K, Miettinen H I.** High-energy multiplicity distributions and 2-component picture of particle production. *Physics Letters B* 43(1):61, 1973.
17. 16 19 23 58 **Rosenhan D L.** Being sane in insane places. *Science* 179(4070):250, 1973.
18. 16 31 40 87 **Schreier M H, Staehelin T.** Initiation of mammalian protein synthesis; importance of ribosome and initiation factor quality for efficiency of in-vitro systems. *J. Mol. Biol.* 73(3):329, 1973.
19. 15 14 8 37 **Chew G F.** Arguments supporting a positive 2-pomeranchukon discontinuity. *Phys. Rev. D.* 7(3):934, 1973.
20. 15 40 26 81 **Frazer W R, Peccei R D, Pinsky S S, Tan C.** Multiplicity distributions resulting from multiperipheral plus diffractive production. *Phys. Rev. D* 7(9):2647, 1973.
21. 15 26 33 74 **Gallus A S, Hirsh J, Tuttle R J, Trebilcock R, O'Brien S E, Carroll J J, Minden J H, Hudecki S M.** Small subcutaneous doses of heparin in prevention of venous thrombosis. *New Engl. J. Med.* 288(11):545, 1973.
22. 15 18 8 41 **Gronau M, Ravndal F, Zarmi Y.** Applications of quark parton model in one-particle inclusive leptonic-induced reactions. *Nucl. Phys. B.* 51(1):611, 1973.
23. 15 29 44 88 **Wolff J, Cook G H.** Activation of thyroid membrane adenylate cyclase by purine nucleotides. *J. Biol. Chem.* 248(1):350, 1973.
24. 14 60 92 166 **Brazeau P, Vale W, Burgus R, Ling N, Butcher M, Rivier J, Guillemin R.** Hypothalamic polypeptide that inhibits secretion of immunoreactive pituitary growth hormone. *Science* 179(4068):77, 1973.
25. 14 26 26 66 **Clarke J S, Fisher H N, Mason R J.** Laser driven implosion of spherical DT targets to thermonuclear burn conditions. *Phys. Rev. Letters* 30(3):89, 1973.
26. 14 92 77 183 **Coleman L B, Cohen M J, Sandman D J, Yamagishi F G, Garito A F, Heeger A J.** Superconducting fluctuations and pearls instability in an organic solid. *Sol. St. Comm.* 12(11):1125, 1973.
27. 14 44 52 110 **Ferraris J P, Walatka V, Perlstein J H, Cowan D O.** Electron-transfer in a new highly conducting donor-acceptor complex. *J. Amer. Chem. Soc.* 95(3):948, 1973.
28. 14 16 29 59 **Griffiths R B.** Proposal for notation at tricritical points. *Phys. Rev. B.* 7(1):545, 1973.
29. 14 20 10 44 **Lee B W, Primack J R, Treiman S B.** Some physical constraints on gauge models of weak interactions. *Phys. Rev. D* 7(2):510, 1973.
30. 14 43 25 73 **Piessens W F, Schur P H, Moloney W C, Churchill W H.** Lymphocyte surface immunoglobulins; distribution and frequency in lymphoproliferative diseases. *New Engl. J. Med.* 288(4):176, 1973.
31. 14 21 12 47 **Reeves H, Audouze J, Fowler W A, Schramm D N.** Origin of light elements. *Astrophys. J.* 179(3):909, 1973.
32. 14 90 68 172 **Ross G.D, Rabellino E M, Polley M J, Grey H M.** Combined studies of complement receptor and surface immunoglobulin-bearing cells and sheep erythrocyte rosette-forming cells in normal and leukemic human lymphocytes. *J. Clin. Invest.* 52(2):377, 1973.
33. 14 31 27 72 **Tzagoloff A, Rubin M S, Sierra M F.** Biosynthesis of mitochondrial enzymes. *Biochim. Biophys. Acta.* 301(1):71, 1973.
34. 14 30 20 64 **VanHove L.** Multiplicity distribution and production mechanisms in high-energy hadron collisions. *Physics Letters B.* 43(1):65, 1973.

Since so much time has elapsed, we were able to add to our data for the 1973 papers their citation records for 1974 and 1975. This has turned up some interesting 'flash-in-the-pan' events or other anomalies. Paper 4 by A.P. Vinogradov of the Soviet Union was heavily cited in its first year, but nothing has happened since then.

Paper 5 by Devries and Kubo has a declining citation rate, as does paper 15 by Bhalla and Hein. All other papers on the list went up in citation frequency in 1974. Most of them have already peaked, but there are exceptions. Davidson and Ostriker (9) in astronomy, Miller *et al.* (13) in medicine, Rosenhan (17) on being sane in insane places, Schreier and Staehelin (18) in molecular biology, Gallus *et al.* (21) on use of heparin in venous thrombosis, Wolff and Cook (23) in biochemistry, Brazeau *et al.* (24) on the pituitary growth hormone, Ferraris *et al.* (27) on donor-acceptor electron transfer, and Griffiths (28) tricritical point notation--all these show an increase in citation since 1973.

Papers like numbers 26 and 32 may have peaked, but we can expect

high citation rates for some time.

I think a quick scan of all these titles is worth your effort. Science journalists might well check whether all of these papers received proper attention at the time they were published. The media consider a current journal article news. Let's hope that appearance in these lists will also be deemed newsworthy in the future.

One wonders why no articles from *Nature* appear on this list for 1973. This will be rectified when we publish the 1974 data, but it is interesting to speculate whether the separation of *Nature* into sections for a short period might have had some effect on authors' seeking the widest possible audience for breakthrough results.

The three papers from *Science* on this list were all in the life sciences.

Physics Letters published six of the papers on the list, as did various sections of *Physical Review*. *Physical Review Letters* published four. The *New England Journal of Medicine* had three, *Astrophysical Journal* two, and all others one. The absence of review journals is remarkable considering what we know about their high impact and high immediacy.

1. **Garfield E.** Were the 1972 papers most cited in 1972 the most significant? *Current Contents*[®] No. 42, 17 October 1973, p. 5-7.

2. **LeBel J A.** Sur les relations qui existent entre les formules atomi-

ques des corps organiques et le pouvoir rotatoire de leur dissolutions [Relation between atomic formulae of organic compounds and optical rotation of their solutions]. *Bull. Soc. Chim. France* 22:337-56, 1874.