The Citation of Manuscripts Which Have Appeared in *JAAVSO*

Arlo U. Landolt
Department of Physics and Astronomy, Louisiana State University, Baton Rouge, LA 70803; landolt@phys.lsu.edu

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Abstract A study is presented of the use by the astronomical community of the manuscripts published in *The Journal of the American Association of Variable Star Observers* (*JAAVSO*).

1. Introduction

The Journal of the American Association of Variable Star Observers (*JAAVSO*) was established in 1972 as "a place where professional and non-professional astronomers can publish papers on research of interest to the observer" (Mayall 1972). Mayall went on to write that "the new journal would include Abstracts of papers presented at AAVSO meetings, various Committee reports, Minutes of the Meetings of the AAVSO's Council, Observer's Totals, and Book Reviews." Additional insights concerning the formation and development of *JAAVSO* are discussed in the AAVSO's centennial history (Williams and Saladyga 2011). The content of *JAAVSO* has evolved over recent years, now containing less of the business and more of the scholarship of the organization.

The current authors and readers of *JAAVSO* are a mixture of amateur and professional astronomers. These individuals have an abiding interest in celestial phenomena which vary in brightness and color. The kinds of data presented in *JAAVSO* manuscripts have changed over time. Historically, the data primarily were visual or photographic. At present, data may be visual, photoelectric, or CCD-based. Both the precision and accuracy of the published data have improved with time. Suffice it to say that the authors of *JAAVSO* papers are a varied and talented population.

On the whole, and certainly historically, *JAAVSO* papers dwelled more on data acquisition and data presentation. Data interpretation is not pursued to the extent one finds in the professional journals. It is important that there be a journal such as *JAAVSO* for it provides an opportunity to a broader community to write and to publish useful and quality research.

2. Method

The Astrophysics Data System (ADS) is headquartered at the Smithsonian Astrophysical Observatory at Harvard. It is funded by NASA and contains

bibliographic databases, is a digital library, thereby providing access to astronomical information to the world via the World Wide Web. Once in the ADS, and in the Journal/Volume/Page section, a particular journal's code can be entered; for *JAAVSO*, that code is "JAVSO." Next, the desired journal volume number can be entered. This step leads to Query Results which list the papers in their order of appearance in the specified volume. The existence of the letter C indicates that the article was cited. Clicking on the C brings up the citing articles, whose numbers then may be counted.

It transpires that the ADS does not index all articles in a given volume in its article, or paper, count. Two volumes, numbers one and nineteen (which appeared in 1972 and 1990, respectively), were carefully searched in an effort to ascertain which titles were not included by the ADS. In volume one, the Treasurer's Report, Observer Totals, and Committee Reports were not indexed as articles. Similarly, in volume nineteen, the Introduction to the volume, the listing of the papers at First European Meeting of the AAVSO, the Minutes of the Annual Meeting, the Director's annual report, the Committee Reports, and the Treasurer's report were not identified by the ADS. All these written items have the characteristic that they are not astronomical research articles, hence a likely reason for omission from the ADS index count. Another reason for inclusion or omission is that the decision to include or not include depended on the decision maker, different from time to time. This study was limited to papers containing astronomical data.

This exercise reviewed the thirty-nine volumes of *JAAVSO* which were published in the interval 1972 through 2010. The review, the counting of the citations, of the authored articles identified by the ADS, was completed on October, 28, 2011.

A file was created whose function was to contain a count of the number of times each paper in a given volume was cited. This file contained a matrix constructed with the volumes listed in the row, and the possible number of citations, from zero to n, listed in the column. The matrix was filled in by tabulating the citations present, or not, if there were none. As an example, volume one contained thirty-one articles, as defined by the ADS, of which twenty papers never were cited, five papers were cited once, four papers were cited twice, one paper was cited three times, and one paper was cited four times, for a total of twenty citations for the volume.

3. Results

Some aspects of this investigation have been tabulated in Table 1. The Table contains the following information: the volume number in the first column, the year of publication in the second column, the number of papers which appeared in the volume in column three, and the total number of citations received by the papers in that volume in column four. Column five contains the number

of citations due to *JAAVSO* authors for a given volume, or, another way of describing it, column five gives the number of citations in column four which are by *JAAVSO* authors. The last column provides the percentage of the citations which were due to *JAAVSO* authors. This column is of interest because it indicates whether only individuals who publish in *JAAVSO* are citing *JAAVSO* papers. The goal of this table is to compare the number of citations by the astronomical community as a function of volume, with the number of citations by *JAAVSO* authors.

The information tabulated in Table 1 indicates that 1,545 papers were published in *JAAVSO* over its first thirty-nine years, a rate of 39.6 papers per volume. Those 1,545 papers have been cited 1,296 times, or, 0.84 citations per paper.

Of the total 1,296 citations, 464, or 35.8%, were citations by other *JAAVSO* authors. And, 64.2%, about two-thirds, of all citations to *JAAVSO* papers came from the greater astronomical community. A total of 1,296 citations in thirty-nine volumes leads to 33.2 citations per volume.

The last column in Table 1 provides the percentage of *JAAVSO* author citations for each volume. On the average, 37% of the citations to papers in a given volume are by *JAAVSO* authors.

Eighteen papers in these thirty-nine volumes were cited ten or more times. The paper with the most citations, nineteen, was by Percy, *et al.*, 1985, *JAAVSO*, vol. 14, p. 1. Appendix 1 lists the eighteen papers in chronological order, and which were cited at least ten times, through October 28, 2011. The number in brackets for each listed paper provides the citation count for that paper. The purpose in listing the most cited papers is to show the breadth of the projects found useful by the user community. It should be emphasized that a small number of citations does not mean that a paper has no value. Indeed, such a paper's content may be crucial to a citer's own research.

In summary, one can say that the articles, the papers, which appear in the issues of *JAAVSO*, are read by, and are cited by, researchers across the amateur and professional community.

References

Mayall, M. M. 1972, *J. Amer. Assoc. Var. Star Obs.*, **1**, 1.

Williams, T. R., and Saladyga, M. 2011, *Advancing Variable Star Astronomy: The Centennial History of the American Association of Variable Star Observers*, Cambridge Univ. Press, Cambridge.

Table 1. Citation counts of papers published in *JAAVSO*, volumes 1 through 39.

Vol.	*Year*	*Number of Papers*	*Total Number of Cites*	*Number of JAAVSO Cites*	*Percent JAAVSO Cites*
1	1972	31	20	13	65.0
2	1973	25	41	23	56.0
3	1974	20	40	11	27.5
4	1975	12	13	4	30.8
5	1976	33	30	6	20.0
6	1977	36	19	7	36.8
7	1978	45	44	12	27.3
8	1979	42	20	12	60.0
9	1980	39	24	12	50.0
10	1981	52	40	20	50.0
11	1982	35	22	5	22.7
12	1983	29	11	6	54.5
13	1984	30	5	2	40.0
14	1985	31	49	22	44.9
15	1986	62	68	45	66.2
16	1987	35	31	18	58.1
17	1988	39	40	18	45.0
18	1989	45	54	19	35.2
19	1990	47	42	9	21.4
20	1991	76	47	18	38.3
21	1992	60	83	31	37.3
22	1993	32	48	8	16.7
23	1994	15	12	6	50.0
24	1995	13	17	4	23.5
25	1996	45	41	16	39.0
26	1997	30	45	10	22.2
27	1998	14	33	7	21.2
28	1999	44	61	15	24.6
29	2000	56	48	8	16.7
30	2001	37	29	6	20.7
31	2002	45	36	7	19.4
32	2003	25	23	3	13.0
33	2004	58	48	18	37.5
34	2005	43	16	11	68.8
35	2006	100	23	9	39.1
36	2007	23	11	7	63.6
37	2008	43	25	5	20.0
38	2009	36	19	6	31.6
39	2010	62	18	5	27.8

Appendix 1

Papers published in JAAVSO having the most citations. The papers are listed in chronological order. The number in brackets for each listed paper provides the citation count for that paper.

JAAVSO, **2**, 52, 1973 [11]
Dinerstein, H., "VX Sagittarii: A Variable at Many Wavelengths."

JAAVSO, **10**, 1, 1981 [16]
Stanton, R. H., "Photoelectric Measures of AAVSO Comparison Star Sequences—Part Two."

JAAVSO, **14**, 1, 1985 [19]
Percy, J. R., Fabro, V. A., and Keith, D. W., "The Application of Visual Observations to the Study of a Small Amplitude Variable Star: Rho Cassiopeiae."

JAAVSO, **15**, 243, 1986 [15]
Belserene, E. P., "O–C by Computer."

JAAVSO, **17**, 34, 1988 [10]
Kiplinger, A. L., Mattei, J. A., Danskin, K. H., and Morgan, J. E., "Low-amplitude long-term modulations resembling solar cycles in SS Cygni."

JAAVSO, **21**, 42, 1992 [10]
Wing, R. F., "Three-Color Narrow-Band Photoelectric Photometry of Red Variables."

JAAVSO, **21**, 111, 1992 [11]
Samolyk, G., "A Period Update for the Five Eclipsing Biinary Stars: SS Ari, TY Boo, DF Hya, Z Lep, and TY UMa."

JAAVSO, **22**, 105, 1993 [18]
Oppenheimer, B. D., and Mattei, J. A., "Analysis of Long-Term AAVSO Observations of RS Ophiuchi."

JAAVSO, **24**, 106, 1995 [10]
Mattei, J. A., and Foster, G., "Dramatic Period Decrease in T Ursae Minoris."

JAAVSO, **26**, 115, 1997 [11]
Hoffleit, D., "History of the Discovery of Mira Stars."

JAAVSO, **26**, 57, 1997 [11]
Mattei, J. A., "Introducing Mira Variables."

JAAVSO, **27**, 101, 1998 [14]
Turner, D. G., "Monitoring the Evolution of Cepheid Variables."

JAAVSO, **27**, 97, 1998 [14]
Karovska, M., Carilli, C. L., and Mattei, J. A., "Possible Jet Formation in the Symbiotic System CH Cyg."

JAAVSO, **28**, 5, 1999 [14]
Turner, D. G., Horsford, A. J., and MacMillan, J. D., "Monitoring Cepheid Period Changes from Saint Mary's University."

JAAVSO, **31**, 27, 2002 [14]
Zijlstra, A. A., and Bedding, T. R., "Period Evolution in Mira Variables."

JAAVSO, **32**, 89, 2003 [11]
Sokoloski, J. L., "Symbotic Stars as Laboratories for the Study of Accretion and Jets: A Call for Optical Monitoring."

JAAVSO, **33**, 9, 2004 [17]
Percy, J. R., and Mohammed, F., "Self-Correlation Studies of RV Tauri Variables and Related Objects."

JAAVSO, **37**, 90, 2008 [11]
Majaess, D. J., Turner, D. G., Lande, D. J., and Moncrieff, K. E, "The Exciting Star of the Berkeley 59/Cepheus OB4 Complex and Other Chance Variable Star Discoveries."