

Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

Citation analysis: Beyond the Journal Impact Factor MANOLIS

ANTONOIANNAKIS, (1) Physical Review Letters (2) Columbia University —
The journal impact factor is a robust measure of the average citation performance of a journal, but the number of citations varies widely from paper to paper within any journal. Therefore, it makes sense to look for additional ways of characterizing journals in terms of their impact. We introduce the “citation density curve” (citations per paper in a given year for papers published in the previous two years, plotted vs. the citation rank of these papers). This curve, which displays a Zipf’s law behavior, contains all the pertinent information about a journal: its size, its impact factor, the maximum number of citations per paper, the relative size of the top-cited portion of the journal, how the citation density varies within the journal, etc. Being the “fingerprint” of a journal, the citation density curve can be used: (a) by editors, for strategic decisions affecting the future of their journal; (b) by citation analysts, for comparing (ranking) journals; and (c) by authors, for assessing the relative impact of their published work. Further, we identify a complementary metric to the impact factor, a single number that characterizes the top-cited portion of a journal. This metric reproduces the ranking of the citation density curves for various journals, and can be readily calculated from the same data used in the impact factor calculations. We propose that this new metric be used as an essential complement to the impact factor in assessing the true impact of journals.

Manolis Antonoyiannakis
(1) Physical Review Letters (2) Columbia University

Date submitted: 13 Dec 2007

Electronic form version 1.4