

The Chemistry Between Physicists

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ABSTRACT

The journals of the American Physical Society, (Physical Review's A,B,C,D,E and L) are the standard publication venue for physicists and are some of the most highly rated journals in the world. For scientometricians, these journals hold a special allure: the availability of human-assigned classes from the Physics and Astronomy Classification Scheme (PACS) assigned to each publication in these journals. PACS codes arguably form one of the most accurate representations of the topic space in the field of physics.

We analyze PACS codes from a small sample of data from the Physical Review dataset covering the years from 1993 to 2004. Several statistics of PACS code usage over time are computed and show interesting results. For example, the range of topics covered in different years varies widely possibly indicating a very significant shift in focus of physics research from year to year.

We further build an unweighted undirected graph of publications where nodes represent publications and edges represent the presence of at least one PACS code shared by the pair. Using a clustering algorithm (CFinder) by Palla et al (2006) we cluster this network for each year. Results of the clustering reveal interesting patterns of interdisciplinarity among the fields of physics.

Keywords

citation networks, interdisciplinarity, scientometrics