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Fractional counting of authorship to quantify scientific research output

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We investigate the problem of counting co-authorhip in order to quantify the impact and relevance of scientific research output through normalized \textit {h-index} and \textit{g-index}. We use the papers whose authors belong to a subset of full professors of the Italian Settore Scientifico Disciplinare (SSD) FIS01 - Experimental Physics. In this SSD two populations, characterized by the number of co-authors of each paper, are roughly present. The total number of citations for each individuals, as well as their h-index and g-index, strongly depends on the average number of co-authors. We show that, in order to remove the dependence of the various indices on the two populations, the best way to define a fractional counting of autorship is to divide the number of citations received by each paper by the square root of the number of co-authors. This allows us to obtain some information which can be used for a better understanding of the scientific knowledge made through the process of writing and publishing papers.

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