

A Network Analysis of the Imprecise Probability Community based on ISIPTA Electronic Proceedings

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Abstract

In the last decade, research activities in imprecise probability (IP), carried out by isolated groups scattered throughout the world, have been successively embedded into a number of formal structures: the biennial ISIPTA symposium starting in 1999, the SIPTA society founded in 2002, and the SIPTA summer schools since 2004. To reflect this period of adolescence in a data analytic way, a natural approach is to apply social network analysis.

Following recent publications in the analysis of scientific collaboration networks [1, 2, 4], we intend to extract the research network in the IP community. By analyzing co-authorship for all ISIPTA papers, we draw the resulting network graph and apply basic methods to characterize a community, as the distribution of the number of collaborators, the number of papers per author, and the number of authors per paper. In addition, we investigate further interesting properties such as clustering and the ‘small-world’ hypothesis [3, 4, 6]. Using the geographical position of authors (via their e-mail addresses) allows us to represent the scientific collaboration network in a world map.

We release collected data and code as a package on CRAN, the repository of extensions for the statistical programming environment **R** [5]. The package will provide data for future analyses, e.g., on the network of the paper’s keywords, which may give an alternative representation of the network of collaborations, as suggested by [7].

Furthermore, we hope to stimulate the discussion on potential applications of IP in network analysis methods.

Keywords. Network analysis, imprecise probability, scientific collaboration networks, ‘small-world’ networks.

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