Butlletí de la Societat Catalana de Matemàtiques
Vol. 38, núm. 2, 2023. Pàg. 201–202

English summaries

Rosa Camps, Xavier Mora and Laia Saumell

The method of Eneström and Phragmén for electing a body of representatives by means of open lists

The election of a body of representatives through open list voting requires a suitable algorithm to determine which candidates are selected. The option of selecting the most voted candidates has the serious drawback of potentially leaving many voters without representation. In this paper, we study an alternative, fairer algorithm that was proposed at the turn of the 19th century by Gustaf Eneström and Edvard Phragmén. In common with other proposals by Phragmén himself, it is assumed that the voters express themselves by means of approval voting, that is, each voter indicates an unordered list of the candidates that he deems suitable to represent him. Unlike other methods of the same type, here one starts by setting a quota, that is, the number of votes that give the right to a seat. In fact, Eneström and Phragmén's method may be seen as an extension of the method of largest remainders to open lists instead of closed lists, or also as an adaptation of the single transferable vote to approval voting instead of preferential voting. The properties of this method are studied and compared with those of other methods of the same type.

Keywords: open lists, electing a body of representatives, parliamentary elections, proportional representation, method of Eneström and Phragmén.

MSC2020 Subject Classification: 91B12, 91B14.

Núria Fagella and Joan Porti

Two theorems and one proof by Dennis Sullivan

In 1983, Dennis Sullivan solved a problem in holomorphic dynamics concerning rational maps of the Riemann sphere, which remained unsolved for more than 60 years. Using the same techniques, he provided a new proof for a theorem on Kleinian groups due to Ahlfors. This initiated a period of intense activity and interaction between both areas.

Keywords: holomorphic dynamics, rational transformation, wandering domain, Kleinian group, Riemann surface.

MSC2020 Subject Classification: 37F31, 37F32, 30F40.

Guillem Perarnau

Random graphs with a given degree sequence

Since the emergence of the notion of complex networks, random graphs have become a fundamental tool for their modeling and analysis. In this paper we address the study of random graphs with a given degree sequence, where the degree of each vertex is predetermined and a random instance that meets these constraints is chosen. Our aim is to introduce the newcomers to this topic by presenting the most relevant results in this area and providing intuition as to why they are valid, without delving into rigorous proofs.

Keywords: random graphs, degree sequence, models for complex networks, connected components, graph distances, graph enumeration, random graph sampling.

MSC2020 Subject Classification: 05C80, 05C82.
