

1086-52-204

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1700 Moore St., Huntingdon, PA 16652. *A Polytopal Interpretation of the Banzhaf Power  
Index*. Preliminary report.

In a weighted voting system, each player has a certain number of votes and casts them all for or against a proposal. The proposal passes if the total number of votes exceeds some quota. A player's influence is measured by the Banzhaf Power Index, which counts the ways in which a player's vote can be critical to passing a proposal. Two weighted voting systems are equivalent if they have exactly the same winning coalitions, which means they correspond to the same region in a particular hyperplane arrangement. We show that the coordinates of the vertices of the polytope dual to this hyperplane arrangement have a nice connection to the Banzhaf Power Index. We also give a geometric interpretation of changes in the quota. (Received August 07, 2012)