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Selene Chew* (sec6971@rit.edu), School of Mathematical Sciences, Rochester Institute of Technology, Rochester, NY 14612. *A graph theoretic approach to the inverse voter preference voter problem.*

In referendum elections, voters are often required to cast simultaneous votes on multiple questions or proposals. The separability problem occurs when a voter's preferences on the outcome of one or more proposals depend on the predicted outcomes of other proposals. The character of a voter's preferences describes the interdependence relationships (for that voter) between the sets of proposals in the election. While it is easy to determine the character of a voter's preferences, the inverse problem—that is, finding a voter whose preferences have a given, pre-determined character—is much more challenging. In this talk, we will describe a graph theoretic approach to character construction, defining the character spectrum of a graph and investigating related theoretical and computational results. This work was completed as part of the Summer Mathematics REU at Grand Valley State University. (Received September 19, 2015)