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**DIMACS**

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Center for Discrete Mathematics & Theoretical Computer Science  
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## MPE2013+ Workshop *Not in My Back Yard (NIMBY)* 2018

**Where:** Muhlenberg College, Allentown, Pennsylvania

**When:** June 10 - 14, 2018

**About this workshop:** This Mathematics of Planet Earth 2013+ (MPE2013+) workshop will expose faculty teaching undergraduates to current applications of mathematical and computational sciences and provide an opportunity for government or industry professionals to learn about recent research in related areas. The topic will be presented over the course of 3.5 days in series of lectures and activities; participants will be involved in research activities that they and their students can continue with after the workshop.

**Topic:** **Mathematical and Computational tools for Decision Making**

**Organizers:** Dr. Margaret (Midge) Cozzens, Distinguished Professor / Associate Director, DIMACS Rutgers University  
Dr. Gene Fiorini, Truman L. Koehler Professor of Mathematics, Muhlenberg College

**Speakers:** TBA

**Not in My Backyard** explores how mathematical tools can be used to consider social and environmental justice when making decisions like where to put a toxic waste dump. Often such facilities are located in economically depressed areas, based on priorities that further disadvantage those who are already disadvantaged.

Similar to issues of toxic waste are issues of destruction of views such as the building of dunes along the Atlantic Ocean and others. For example, some residents and businesses of Cape Cod, Martha's Vineyard have opposed the construction of Cape Wind, a proposed offshore Wind farm in Nantucket Sound. Proponents cite the environmental, economic, and energy security, the benefits of clean renewable energy, while opponents are against any obstruction to the views from oceanfront vacation homes and tourist destinations based in the region. Similar to the situation in Nantucket Sound, Mass., a minority of residents in St. Lucie County, Florida have vehemently opposed the construction of wind turbines in the county. The construction of the wind turbines is strongly supported by over 80% of county residents according to a 2008 Florida Power and Light poll. Additionally, the power company proposed building the turbines in a location on a beach near a prior existing nuclear power plant owned by the company

The workshop will provide background in decision theory and discuss recent developments that emphasize the role of discrete mathematics in decision theory. It focuses on three topics which directly apply to NIMBY issues. The first is the transitive simple majorities problem of determining the maximum number of linear orders on  $n$  candidates that prevent the occurrence of cyclic majorities when voters' preferences are confined to those orders. The second involves the varieties of unique solutions to simple systems of  $n - 1$  linearly independent homogeneous linear equations in  $n$  variables of types that arise from qualitative equivalence comparisons in the measurement of subjective probabilities and utility differences. The third topic describes a computer-efficient hierarchy of stochastic-dominance relations for comparisons of risky alternatives whose outcomes lie in a unidimensional set of evenly spaced points.

**Registration fees, lodging, meals and travel:** *Accepted participants from US academic institutions:* registration, lodging in a single room, and meals will be provided at no charge. Limited funds are expected to be available to provide partial support for travel.

**Deadline for Applications is March 15, 2018 or until all slots are filled.** A link to the online application is at <http://ccicada.org/2018/01/24/2018-mpe-workshop-june-10-14-2018/>. Applications must be submitted online and will be reviewed as they are received.

**Sponsorship:** This 2018 Workshop is presented under the auspices of the National Science Foundation grant for Mathematics of Planet Earth 2013+ awarded to DIMACS.

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