



Mathematical Problems in Engineering

Special Issue on **Safe, Resilient, and Sustainable Transportation Systems**

CALL FOR PAPERS

Traffic accidents are among the top 10 leading causes of death in the world. In 2012 alone, they resulted in more than 1.3 million fatalities. Every year, traffic accidents cause billions of dollars of losses in terms of property damage, productivity, wasted time, and fuel due to congestion. Traffic safety is becoming an increasingly important issue particularly in some developing countries that are facing the challenges of rapid urbanization and motorization. Improving traffic safety relies heavily on mathematical modeling. For example, generalized linear models, discrete choice analysis, empirical Bayes models, and hazard models have been extensively used to analyze crash data and quantify contributing factors. Wide deployment of sensors has collected big safety data sets that require more advanced analytical techniques.

In addition to traffic safety, there are abundant examples of transportation systems being disrupted by disasters and extreme weather events such as earthquakes, snow storms, and floods. It is clearly important to build a resilient and sustainable transportation system that is less vulnerable to disasters and has the minimum possible carbon footprint. This requires advanced mathematical models and sophisticated simulation tools to assess how passenger and freight transportation systems will behave under emergency situations and use such information to reinforce system design and improve system operations.

For this special issue, authors are encouraged to submit original review and research articles focusing on safe, resilient, and sustainable transportation systems.

Potential topics include, but are not limited to:

- ▶ Traffic safety modeling using statistical and artificial intelligence methods
- ▶ Big data applications in safety and resilience of transportation systems
- ▶ Intelligent transportation systems
- ▶ Transportation network modeling and resilience
- ▶ Evacuation modeling and simulation
- ▶ Emergency preparedness and response
- ▶ Advanced and robust traffic control
- ▶ Incident management and modeling
- ▶ Mathematical programming for sustainable and robust supply chain and logistics
- ▶ Facility location modeling
- ▶ Hazardous materials transportation
- ▶ Multimodal and sustainable transportation
- ▶ Modeling and simulation of pedestrian activities during emergency situations

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