

# VORträge zum Operations Research

Kolloquium des Instituts für Operations Research

*Zeit:* Montag, 10. September 2018, 10:00 Uhr

*Ort:* Gebäude 05.20, Raum 4A-09

*Es spricht:* Peter T. Vanberkel, PEng, PhD, Dalhousie University, Canada

*Zum Thema:* **Applications of Operations Research for Coping with Ambulance Offload Delays**

*Abstract:* Nova Scotia's urban Emergency Departments (EDs) often experience overcrowding resulting in delayed handovers of patients by paramedics to the ED. This phenomenon is common across Canada, Australia, and in some US states. It can have a significant impact on the ambulance provider's response times and service levels as well it delays patient care. In this seminar I will present a Markov Decision Process (MDP) model used to determine an ambulance destination policy that accounts for ambulance offload delay (AOD).

We formulate a discrete time, infinite-horizon, discounted MDP model to determine when it is advantageous to send appropriate patients to out-of-region EDs, which have longer transport times but shorter offload times. Based on the MDP model, an optimal ambulance destination policy is constructed by using the policy iteration technique. A computational study is applied with a 12-month period data from an EMS provider who experiences AOD regularly. We find that the optimal policies can significantly reduce AOD, time to bed for patients, and out of service time for paramedics but increases ambulances travel distances. The model can be generalized and used as a decision support tool for EMS systems to mitigate the impact of AOD on their operations.

**Die Vorträge zum Operations Research wenden sich an alle Interessierten!**

Bei Rückfragen wenden Sie sich bitte an:  
Prof. Dr. Stefan Nickel, Institut für Operations Research.