Mathematical Statistics
Stockholm University
Research Report **2016:1**,
http://www.math.su.se

# Reward Algorithms for Exponential Moments of Hitting Times for Semi-Markov Processes

Dmitrii Silvestrov[1] and Raimondo Manca[2]

January 2016

**Abstract**

New algorithms for computing exponential moments of hitting times and accumulated rewards of hitting type for semi-Markov processes are presented. The algorithms are based on special techniques of sequential phase space reduction and recurrence relations connecting exponential moments of rewards. Applications are discussed as well as possible generalizations of presented results and examples.

**Key words**: Semi-Markov process, Hitting time, Accumulated reward, Exponential moment, Phase space reduction, Recurrent algorithm.

**AMS Mathematical Subject Classification 2010**. Primary: 60J10, 60J22, 60J27, 60K15; Secondary: 65C40.

[1]Department of Mathematics, Stockholm University, 106 91, Stockholm, Sweden,
E-mail: silvestrov@math.su.se

[2]Department of Methods and Models for Economics, Territory and Finance, University "La Sapienza", 00161 Rome, Italy,
E-mail: raimondo.manca@uniroma1.it