

## Overview

**Stochastic Orders** are nowadays used in many diverse areas of probability and statistics, as well as in Operations Research and in economics. I'm especially interested in so called integral stochastic orders. They have many interesting applications in such diverse fields as statistics, economics, operations research, reliability theory, actuarial sciences, decision theory and mathematical biology. Typically stochastic orders are used to derive bounds for performance measures of complex stochastic models, for which it is impossible to find explicit formulae or too complicated to evaluate them in reasonable time.

There are classical orderings comparing size and variability of univariate and multivariate random variables as well as stochastic processes. In the univariate case there are many well known orderings like (strong) stochastic order, likelihood ratio order, hazard rate order, (increasing) convex order, Laplace order and many generalizations of them.

**In recent years** there is an increasing interest in multivariate ordering concepts which compare dependence structures of random vectors. Here new concepts like orthant orders, concordance order, supermodular order and directionally convex order have proved to be useful.

**Several orders** of distribution functions, that take into account various forms of possible knowledge about the two underlying distribution functions, are given by several authors such that Convex Order, Laplace Transform Orders, Mean Residual life Order, The Hazard Rate Order, Moment Generating Function Order, Mean Inactivity Time Order.

One of my main interests in this field is the investigation of properties of these new concepts, their interplay with dependence concepts like association, as well as their applications in queuing models, actuarial sciences.

