

## **Malwina Luczak**

Laws of large numbers for epidemic models with countably many types

### **Abstract:**

In modelling parasitic diseases, it is natural to distinguish hosts according to the number of parasites that they carry, leading to a countably infinite type space. Proving the analogue of the deterministic equations, used in models with finitely many types as a "law of large numbers" approximation to the underlying stochastic model, has previously either been done case by case, using some special structure, or else not attempted. In this work, we prove some general theorems of this sort, and complement them with rates of convergence. In this talk, we describe joint work with Andrew Barbour, some of it completed and some in progress.