

## STOCHASTIC PARTICLE SYSTEMS - EXERCISE 4

This week all of the exercises are from Seppäläinen's notes.

**1.** Seppäläinen Exercise 2.2 - page 36 (The event that jumps don't occur simultaneously, for each  $x$  there are only finitely many jumps to and from  $x$  in any finite time interval and that all connected components are finite in suitable time intervals is measurable and has probability one).

**2.** Seppäläinen Exercise 2.3. - page 36 (The generator of the exclusion process is not defined on all continuous functions and it is not continuous on cylinder functions).

**3.** Seppäläinen Exercise 2.5. - page 36 (Showing directly without semigroup theory that  $M_t = f(\eta_t) - \int_0^t Lf(\eta_s)ds$  is a martingale).

**4.** Seppäläinen Exercise 3.5. - page 50 (Semigroup formalism in a couple of deterministic cases).