Feedback project 2

- General good quality peer review feedback
- Reports mostly clear and good
- Presentations very good

- At some seminars everyone did everything right
  - Nice, but then one can learn from mistakes
    - Maybe I should add sub-questions with incorrect procedures …

Feedback random walks 2.1

- Typical issue with self avoiding walk
  - Keeping walk one step before intersecting
  - Or taking another direction when intersection
    - In both cases walks become too compact!
- Random walk: $\sqrt{\langle R^2 \rangle} = \sqrt{N}$, diffusion $\sqrt{\langle R^2 \rangle} = 2\,D\,t$
- Self avoiding walk: $\langle R^2 \rangle^{1/2} = N^{3/4}$
- The exponent is called the Flory exponent: $\frac{3}{2+d}$, d is dimensionality
- The set of **unbiased** SAWs is the set of all normal random walks with all crossing walks removed

Feedback traffic model 2.2 b)

- Question could maybe be formulated clearer: both accuracy and equilibration
  - But these are coupled: need accuracy to see the effect of (insufficient) equilibration
- Equilibration depends on the initial conditions:
  - N cars in the first N cells: long equilibration
  - Uniform or random placement: almost no equilibration needed

Feedback traffic model 2.2 b)

- 2.2 b) "how many simulations to get 0.001 accuracy"
  - When averaging the flow rate over 100 steps you need ~60-120 simulations
  - When taking the final step flow rate only you need ~2500 simulations
    - Thus 20-30x better statistics when using the average!
- Both answers are right and this actually provides insight:
  - The flow rate has a rather short correlation time of about 4 time steps

Feedback traffic model 2.2 c)

- The intention of the other part of 2.2 b) was that with an accurate average flow rate one can observe effects of including non-equilibrium initial data