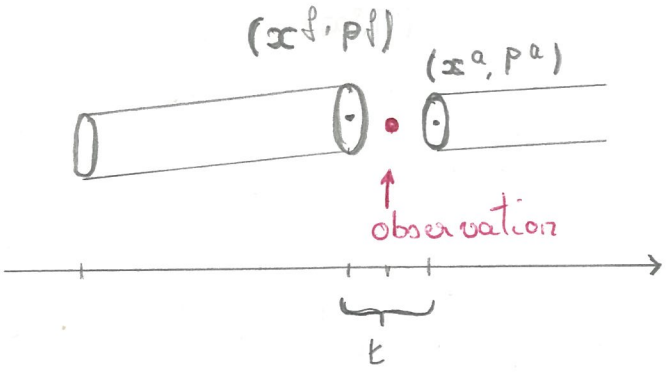
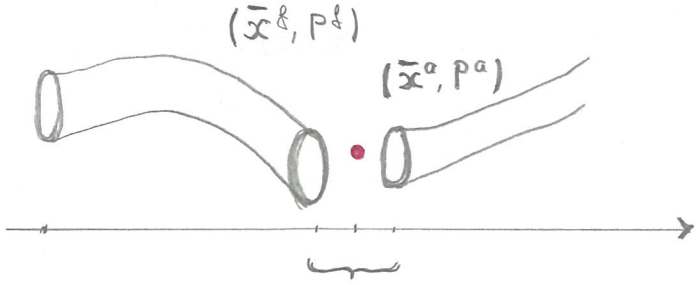
Filters, summary

KF (Kalman filter)



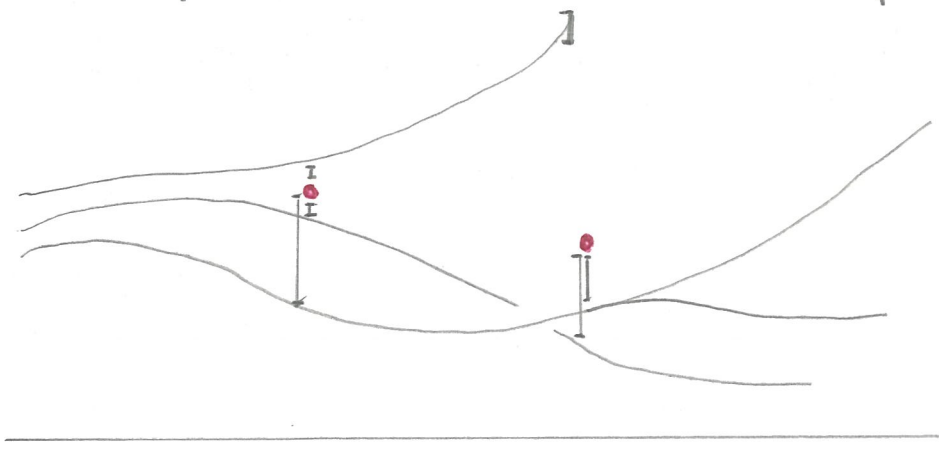
- linear evolution and observation
- Gaussian states and errors

EKF (extended Kalman filter)



- evolution and observation no more linear but <u>linearized</u>
- errors of mean 0, but no Gaussian assumptions

Particle filter SIR (sequential importance resampling)



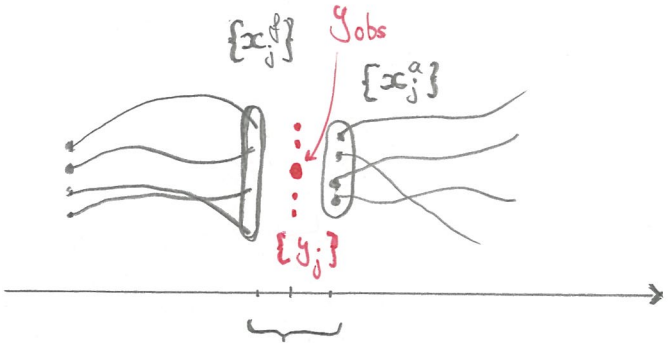
- no assumption
- weight based on importance sampling

$$w_j^n \propto w_j^{n-1} \Pi_{Y^n}(y^n_{obs} | x_j^n)$$

↑ particle j

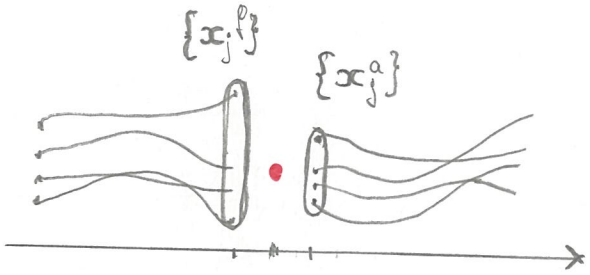
Usually, a lot of particles are necessary.

Stochastic EnKF (ensemble Kalman filter)



- evolution and observation not linear
- stochastic noise added to y_{obs}

ETKF (ensemble transform Kalman filter)



- evolution and observation not linear
- no stochastic noise
- use the square root of a positive matrix.