??
???
????
$X =$
$(x_0, x_1, ..., x_n)Z =$
$(z_1, z_2, ..., z_n)$
$Z_k z_1, z_2, ..., z_n$

$$p(x_0, ..., x_k, Z_k) = p(x_0) \prod_{i=1}^{k} p(z_i|x_i)p(x_i|x_{i-1})$$

(1)

??

$$p(x_k|Z_{k-1}) = \int p(x_k|x_{k-1})p(x_{k-1}|Z_{k-1})dx_{k-1}$$

(2)

$$p(x_k|Z_k) = \frac{p(z_k|x_k)p(x_k|Z_{k-1})}{p(z_k|Z_{k-1})}$$

(3)

$p_{z_k|x_k} p(x_k|Z_{k-1}) x_i z_i x_k z_k x_k x_{k-1}$??

$$x_k = f(x_{k-1}) + v_k$$

(4)

k??

$$z_k = h(x_k) + w_k$$

(5)

$f(\cdot) h(\cdot) v_k w_k x_k loc_k vel_k z_k$
$x_k x_{k-1}$?

$$x_k = F \cdot x_{k-1} + v_k$$

(6)

F

$$F = \begin{pmatrix} 1 & T \\ 0 & 1 \end{pmatrix}$$

(7)

$v_k =$
$(v_k^1, v_k^2)^T E(v_k) =$
0

$$\sum = E(v_k v_k^T) = \begin{pmatrix} \frac{1}{3}T^3 & \frac{1}{2}T^2 \\ \frac{1}{2}T^2 & T \end{pmatrix} \sigma$$

(8)

$\sigma T f(\cdot) h(\cdot)$
?
????
$(ch_1, P_1), (ch_2, P_2), ..., (ch_k, P_k)$
N_P
$_P \omega_0^i =$
$\frac{1}{N_P}$
$k(ch_i^k, P_i^k)$
$kk-$
1
$\omega_1, ..., \omega_{N_P}$
$(\omega_{k-1}^1, \omega_{k-1}^2, ..., \omega_{k-1}^{N_P}) N_P$
$Par_1, ..., Par_{N_P}$
x_k^i
$loc_k^i =$
$loc_{k-1}^i +$
$T \times$
$vel_{k-1}^i +$
v_k^1
$vel_k^i =$
$vel_{k-1}^i +$
v_k^2
$x_k^i =$
(loc_k^i, vel_k^i)
$Par_1, ..., Par_{N_P}$
$\omega_k^i =$
$Pr(z_k|x_k^i)$
$\{ 0 \; z_k \neq$
$h(x_k^i)$
$1 z_k =$
$h(x_k^i)$
$\omega_k^i =$