Reference, Intermediate and Current Configuration:
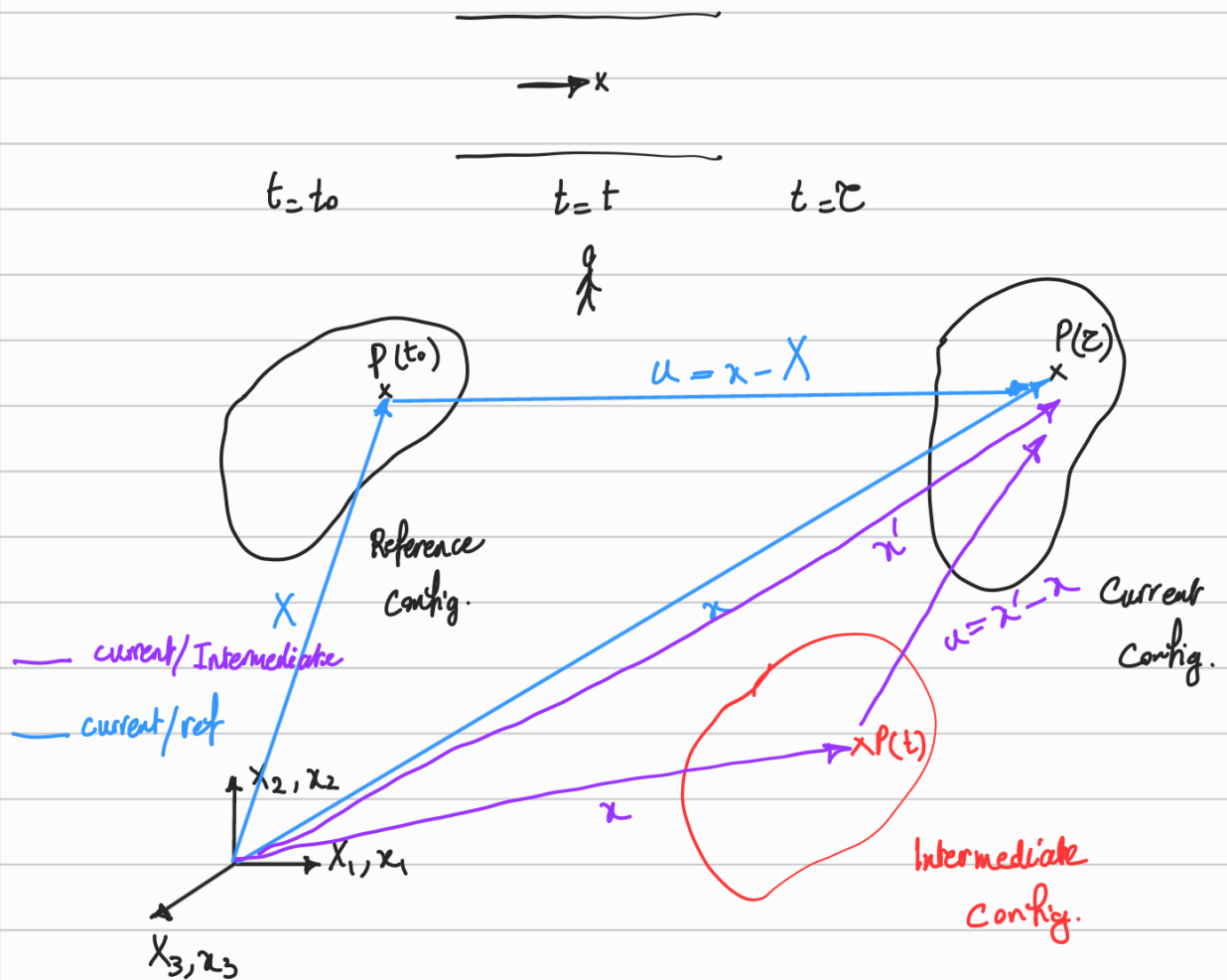
	Current config	Reference/Intermediate config
current/ref	$x_i = x_i(X_j, t)$ with $X_i = x_i(X_j, t_0)$	
current/intermediate (x')	$x_i' = x_i'(x, \tilde{t})$ with $x_i = x_i'(x_j, t)$	

current /ref
(x) (X)

$$v(x,t) = \frac{\partial x}{\partial t}$$

$$F = \nabla x = \frac{\partial x}{\partial X}$$

$$C = F^T F$$

$$B = F F^T$$

current / Intermediate
(x') (x)

$$v(x', \tilde{t}) = \frac{\partial x'}{\partial \tilde{t}}$$

$$F_t = \nabla x_t' = \frac{\partial x'}{\partial x}$$

$$C_t = F_t^T F_t$$

$$B_t = F_t F_t^T$$