# Body State Forecast

## Body center point location

State vector s:

where

(x, y, z) = location of the world object center point  
(vx , vy , vz) = velocity of the object

State equation in differential form:

State equation in difference form:

where is the time increment and Gaussian noise with covariance R.

where and are believed variances of location and velocity.

Kalman filter update: