

# **MATH-541B: Kalman Assignment**

**Saket Choudhary**  
**2170058637**

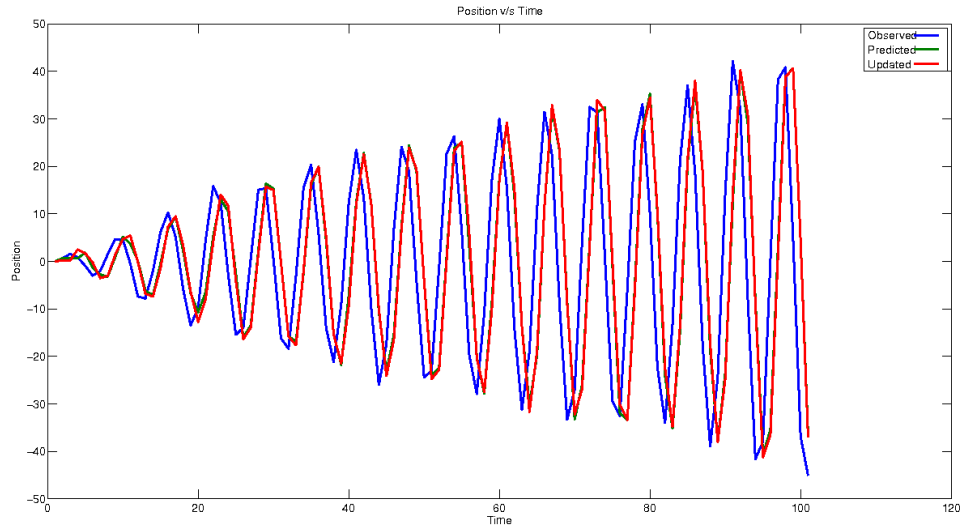


Figure 1: Measured, predicted, filtered position with damping and resonance

## 1 Part d

For  $m = 100, c = 1, k = 1, b = 1, Var(\omega) = 0.1, Var(\epsilon) = 0.1$

For  $m = 1, c = 1, k = 1, b = 1, Var(\omega) = 0.1, Var(\epsilon) = 0.1$

For  $m = 1, c = 1, k = 1, b = 1, Var(\omega) = 2, Var(\epsilon) = 2$

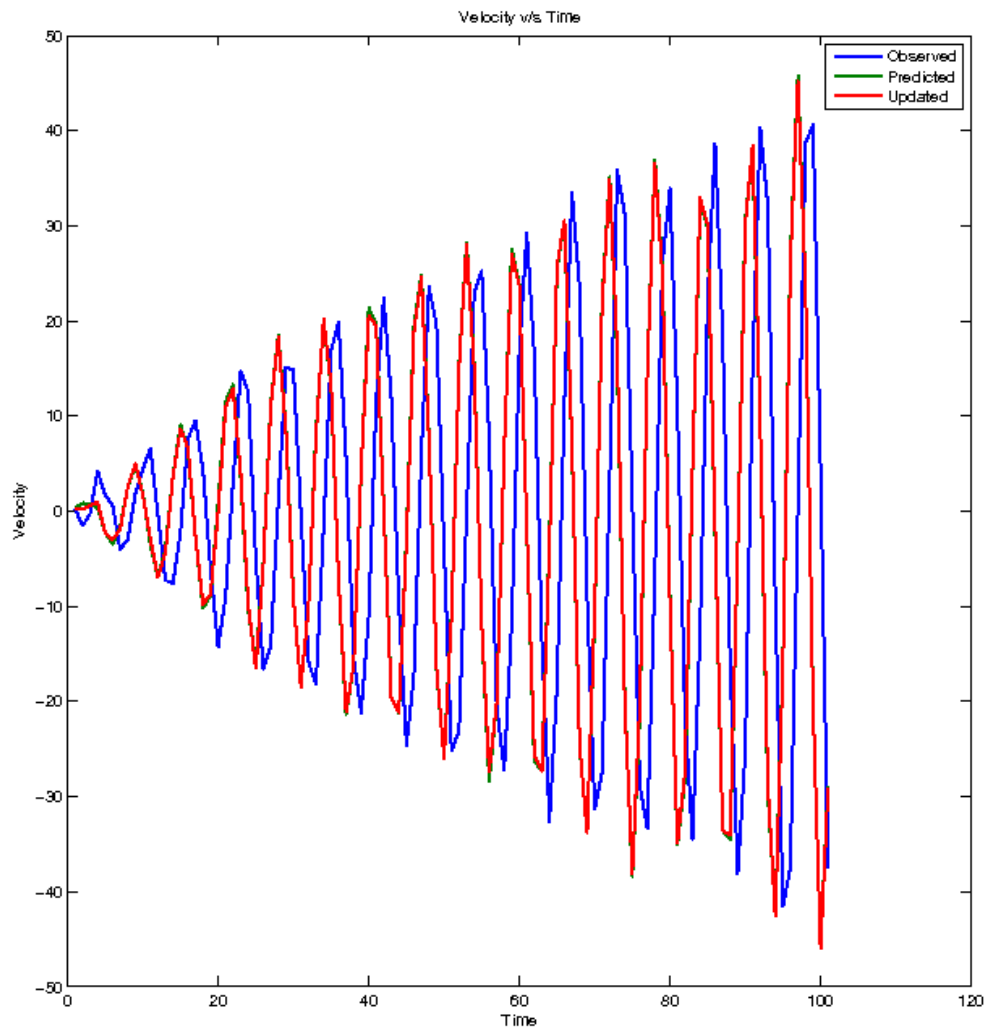


Figure 2: Measured, predicted, filtered velocity with damping and resonance

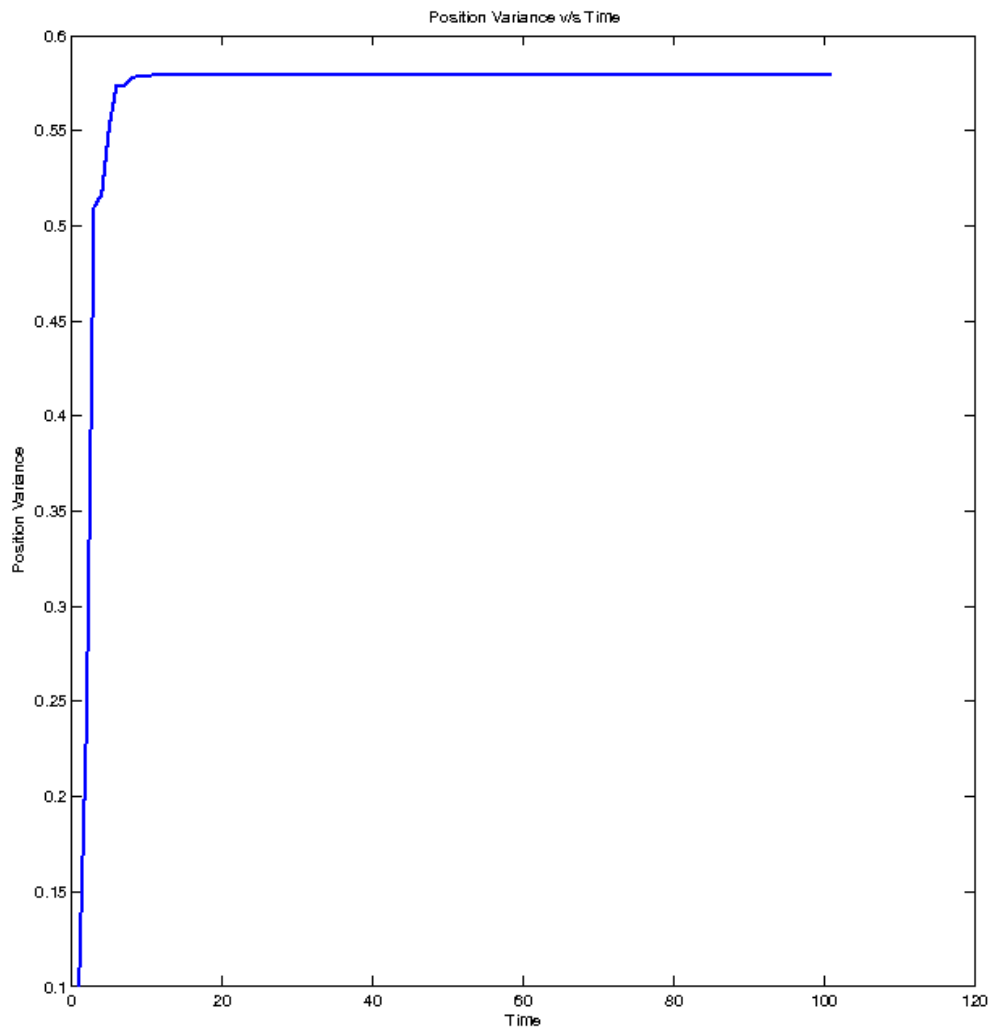


Figure 3: Position variance with damping and resonance

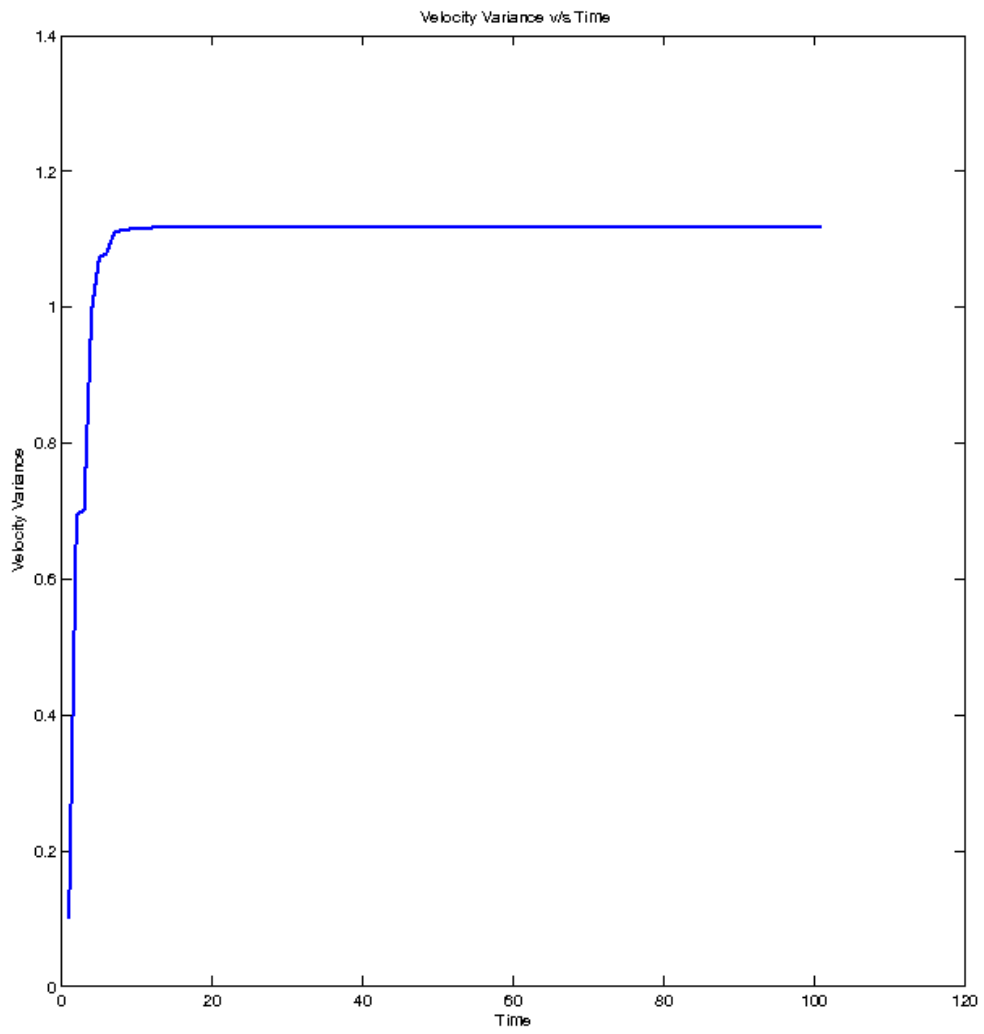


Figure 4: Velocity variance with damping and resonance

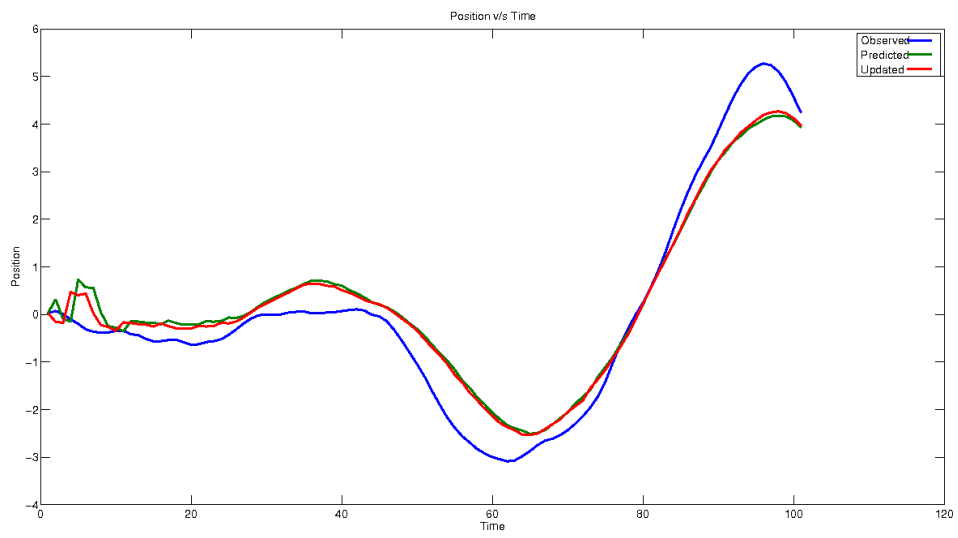


Figure 5: Measured, predicted, filtered position with high mass

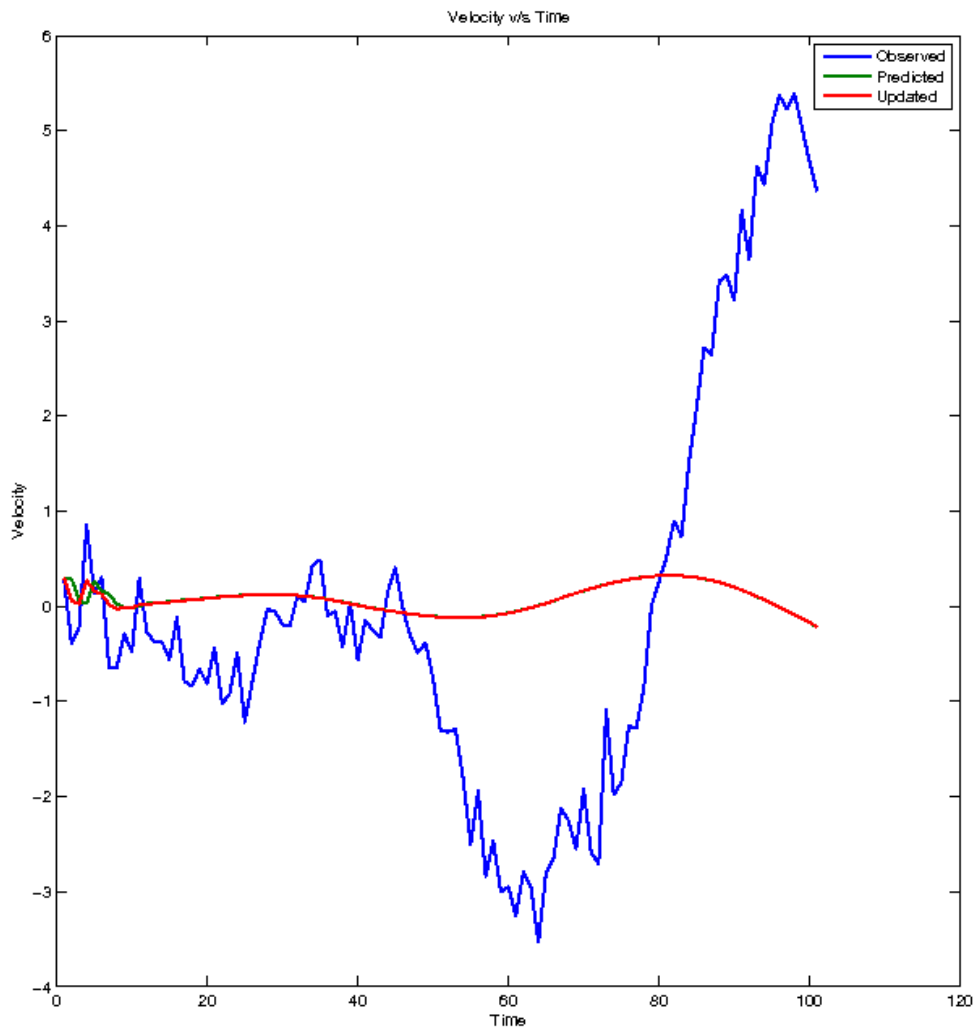


Figure 6: Measured, predicted, filtered velocity with high mass

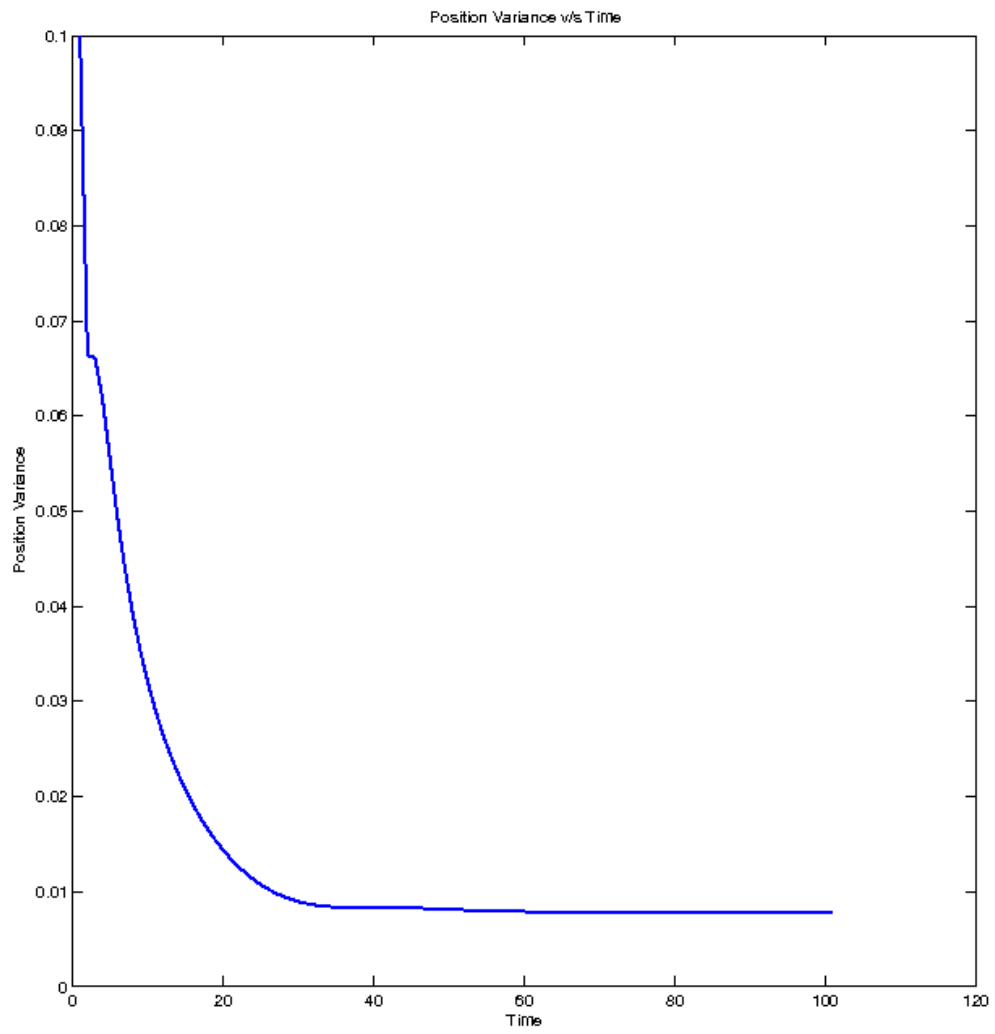


Figure 7: Position variance with high mass



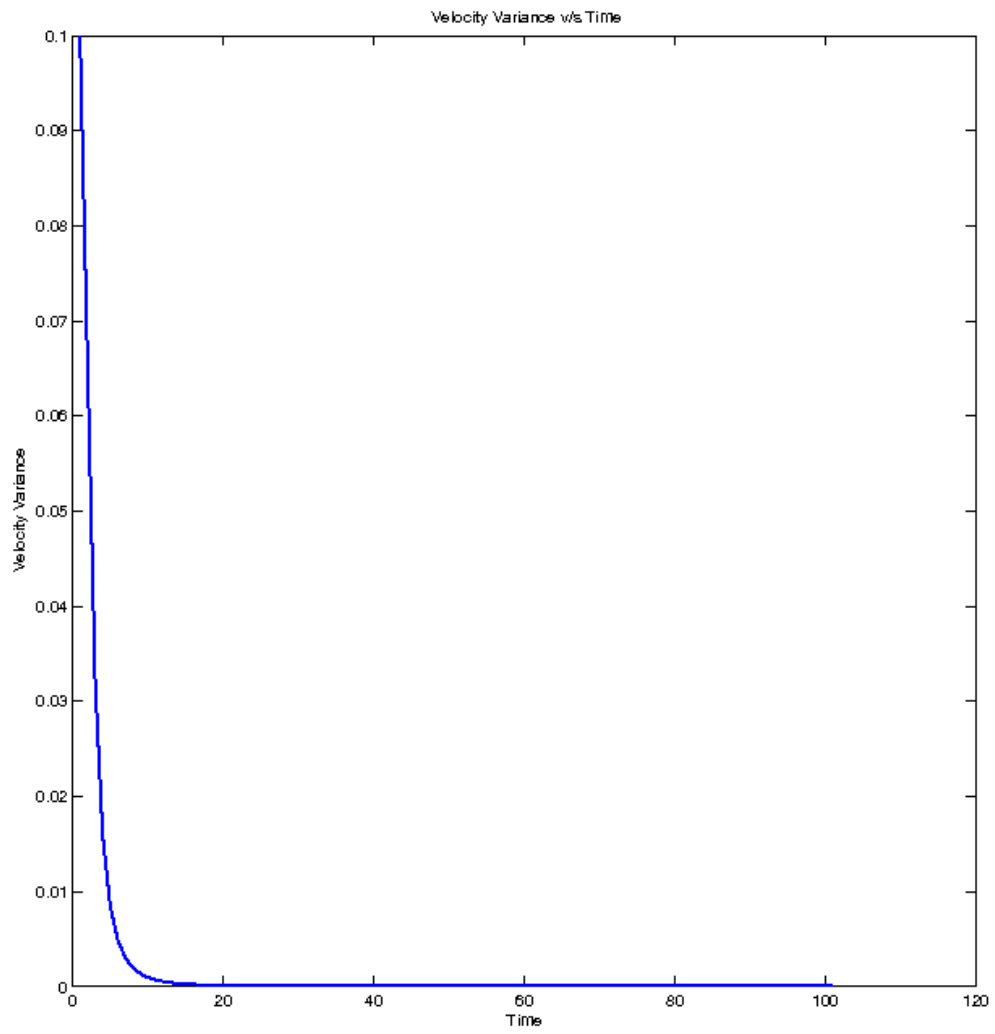


Figure 8: Velocity variance with high mass

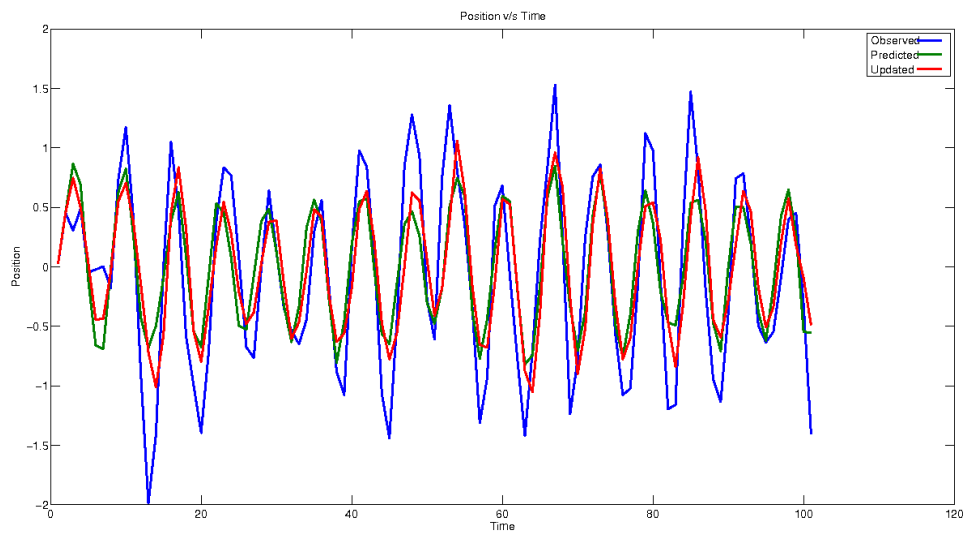


Figure 9: Measured, predicted, filtered position with low mass

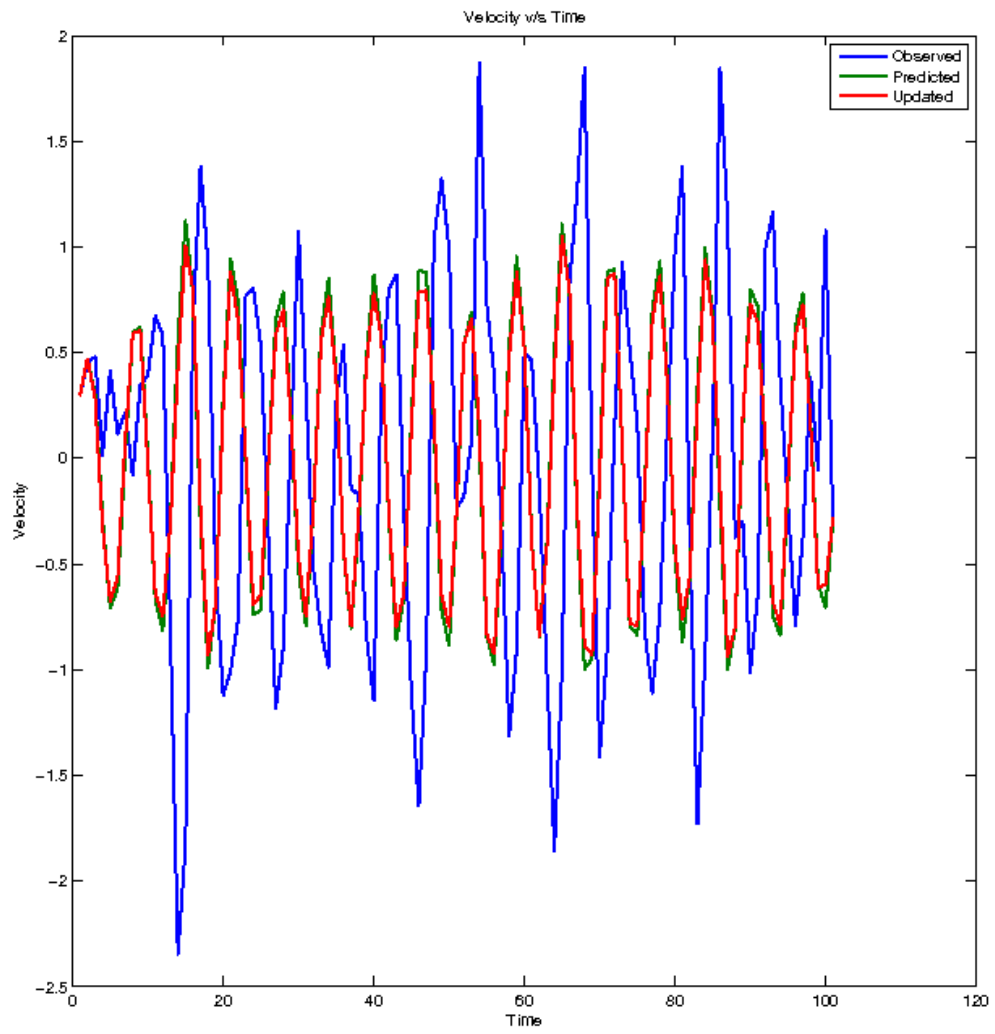


Figure 10: Measured, predicted, filtered velocity with low mass

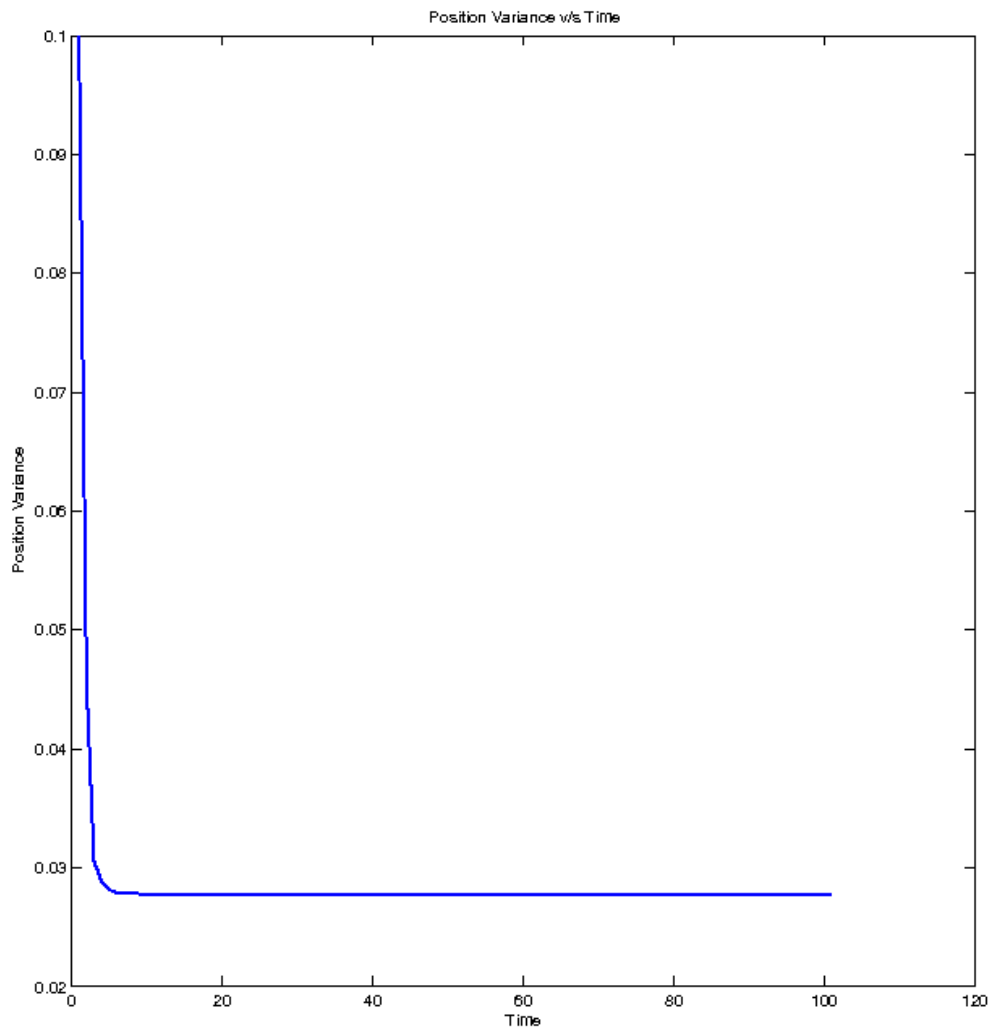


Figure 11: Position variance with low mass

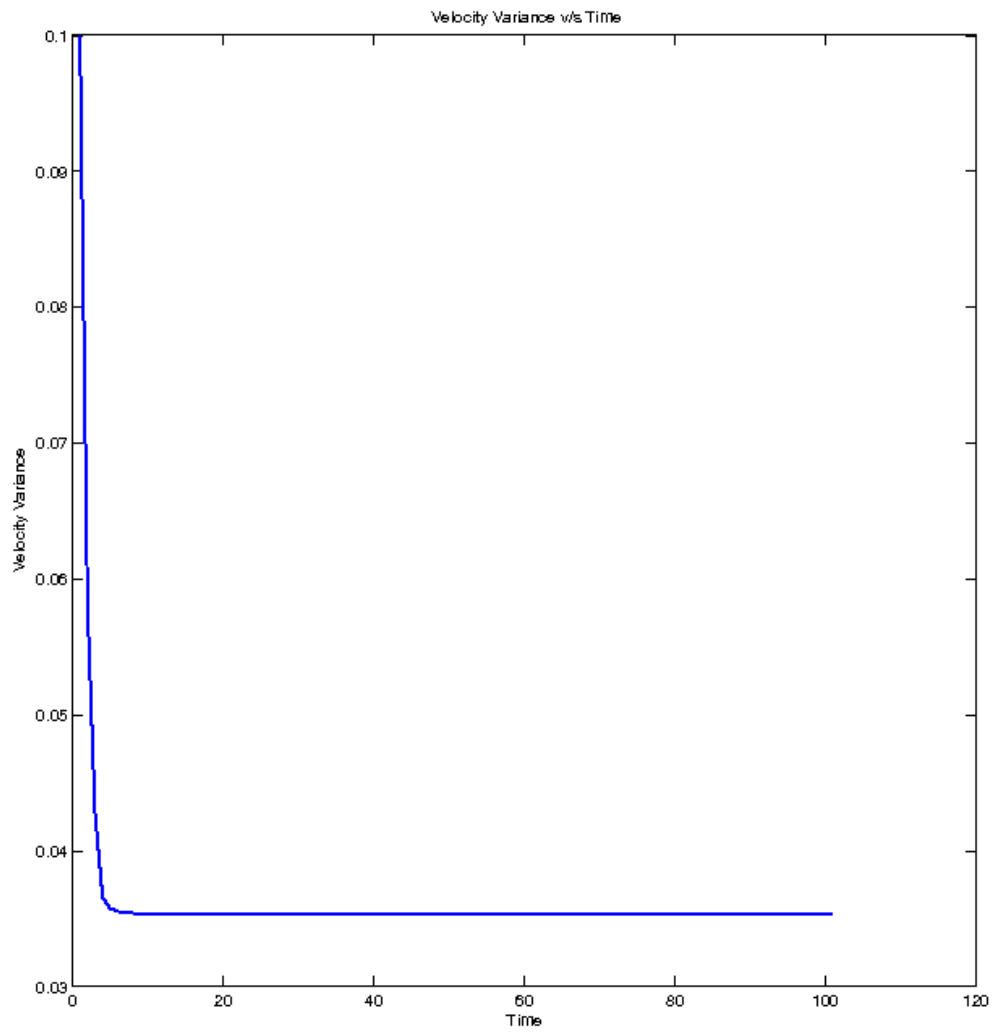


Figure 12: Velocity variance with low mass

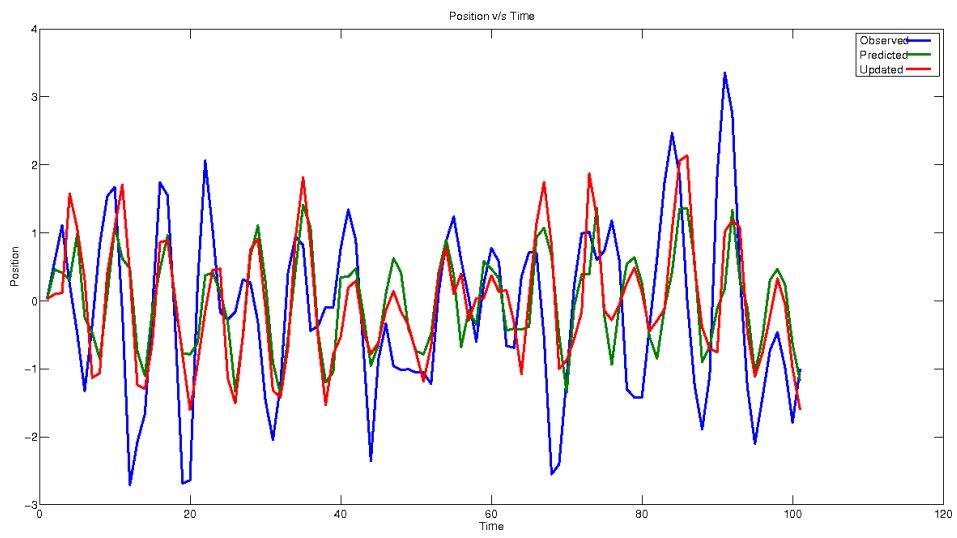


Figure 13: Measured, predicted, filtered position with low mass high variance

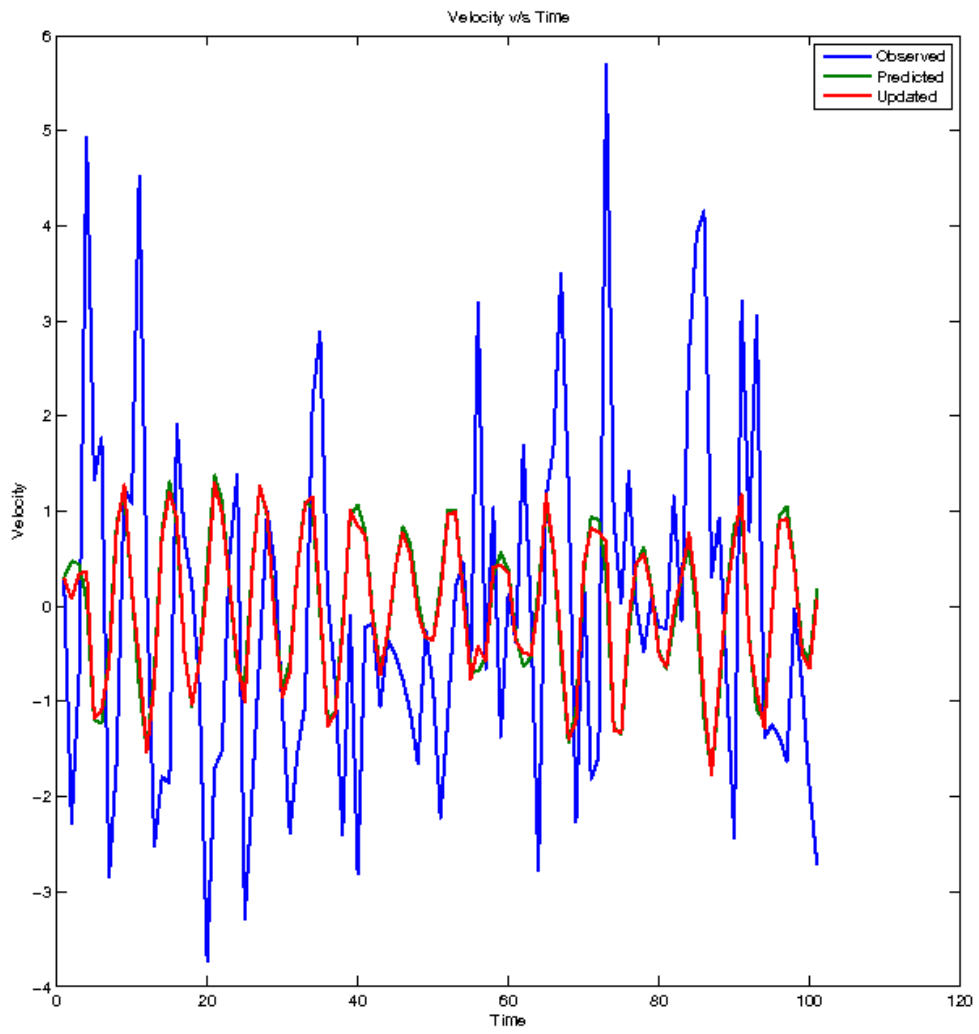


Figure 14: Measured, predicted, filtered velocity with low mass high variance

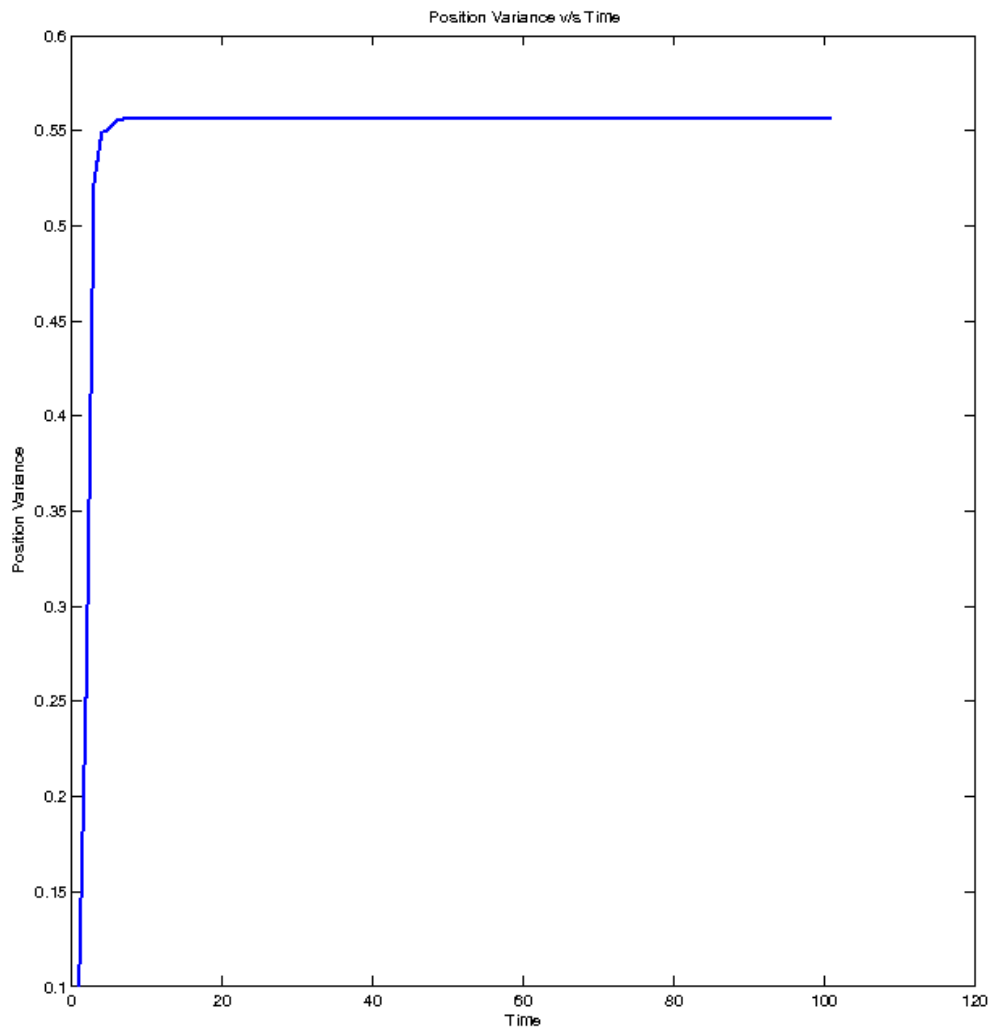


Figure 15: Position variance with low mass high variance



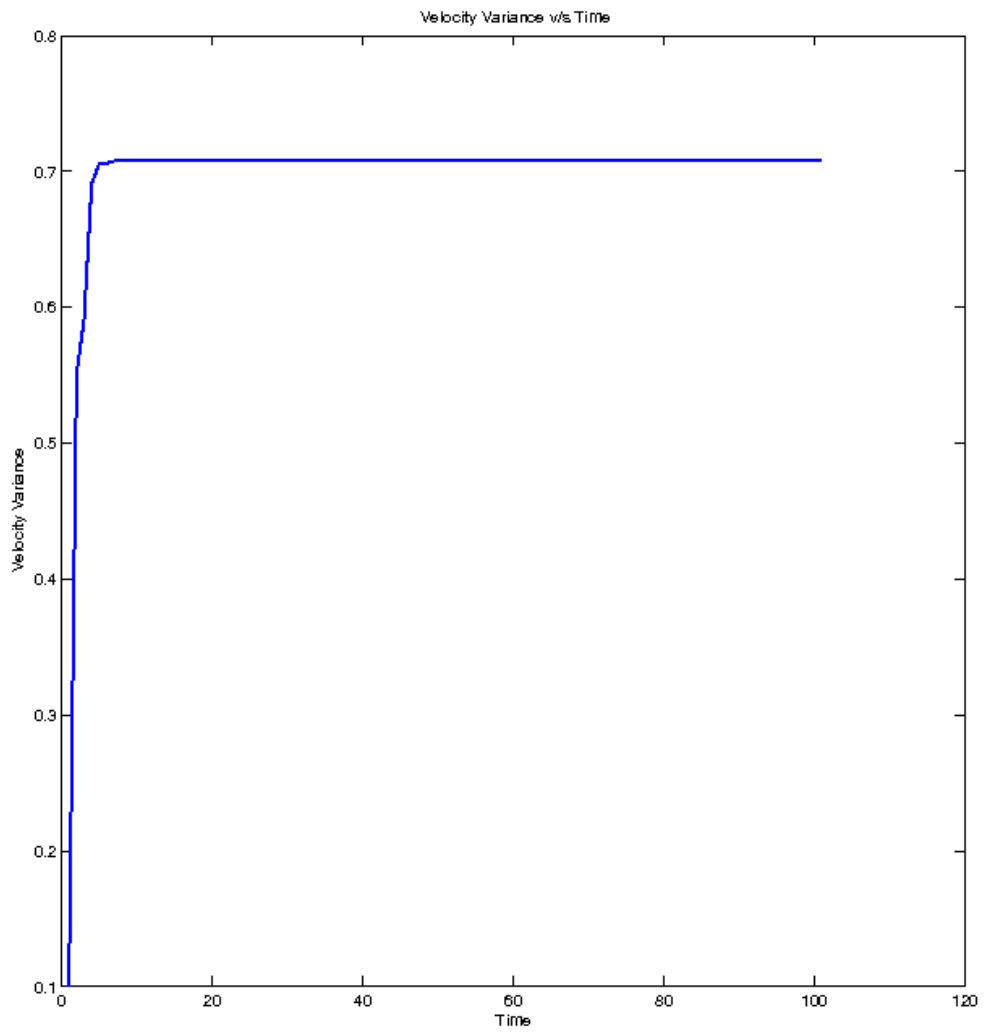


Figure 16: Velocity variance with low mass high variacne