Scenario 1 change mass to 0.5

Scenario 2

############################## SLR SIMPLECONFIG ############################

# this is a comment. [X] is a namespace. [X:Y] initializes X from Y

# Namespace and parameter names are not case-sensitive

# X=Y sets X to Y. Y may be a string, float, or list of 3 floats

############################################################################

[QuadControlParams]

UseIdealEstimator=1

# Physical properties

Mass = 0.5

L = 0.17

Ixx = 0.0023

Iyy = 0.0023

Izz = 0.0046

kappa = 0.016

minMotorThrust = .1

maxMotorThrust = 4.5

# Position control gains

kpPosXY = 1

kpPosZ = 1

KiPosZ = 20

# Velocity control gains

kpVelXY = 4

kpVelZ = 4

# Angle control gains

kpBank = 8

kpYaw = 1

# Angle rate gains

kpPQR = 23, 23, 5

# limits

maxAscentRate = 5

maxDescentRate = 2

maxSpeedXY = 5

maxHorizAccel = 12

maxTiltAngle = .7

Scenario 3

############################## SLR SIMPLECONFIG ############################

# this is a comment. [X] is a namespace. [X:Y] initializes X from Y

# Namespace and parameter names are not case-sensitive

# X=Y sets X to Y. Y may be a string, float, or list of 3 floats

############################################################################

[QuadControlParams]

UseIdealEstimator=1

# Physical properties

Mass = 0.5

L = 0.17

Ixx = 0.0023

Iyy = 0.0023

Izz = 0.0046

kappa = 0.016

minMotorThrust = .1

maxMotorThrust = 4.5

# Position control gains

kpPosXY = 2

kpPosZ = 1

KiPosZ = 20

# Velocity control gains

kpVelXY = 4

kpVelZ = 4

# Angle control gains

kpBank = 8

kpYaw = 2

# Angle rate gains

kpPQR = 23, 23, 5

# limits

maxAscentRate = 5

maxDescentRate = 2

maxSpeedXY = 5

maxHorizAccel = 12

maxTiltAngle = .7

Scenario 3 and Scenario 4 Non idealities

# Physical properties

Mass = 0.5

L = 0.17

Ixx = 0.0023

Iyy = 0.0023

Izz = 0.0046

kappa = 0.016

minMotorThrust = .1

maxMotorThrust = 4.5

# Position control gains

kpPosXY = 3

kpPosZ = 5

KiPosZ = 10

# Velocity control gains

kpVelXY = 10

kpVelZ = 16

# Angle control gains

#kpBank = 5

kpBank = 10

kpYaw = 2

# Angle rate gains

kpPQR = 61, 61, 5

# limits

maxAscentRate = 5

maxDescentRate = 2

maxSpeedXY = 5

maxHorizAccel = 12

maxTiltAngle = .7

Also for scenario 5