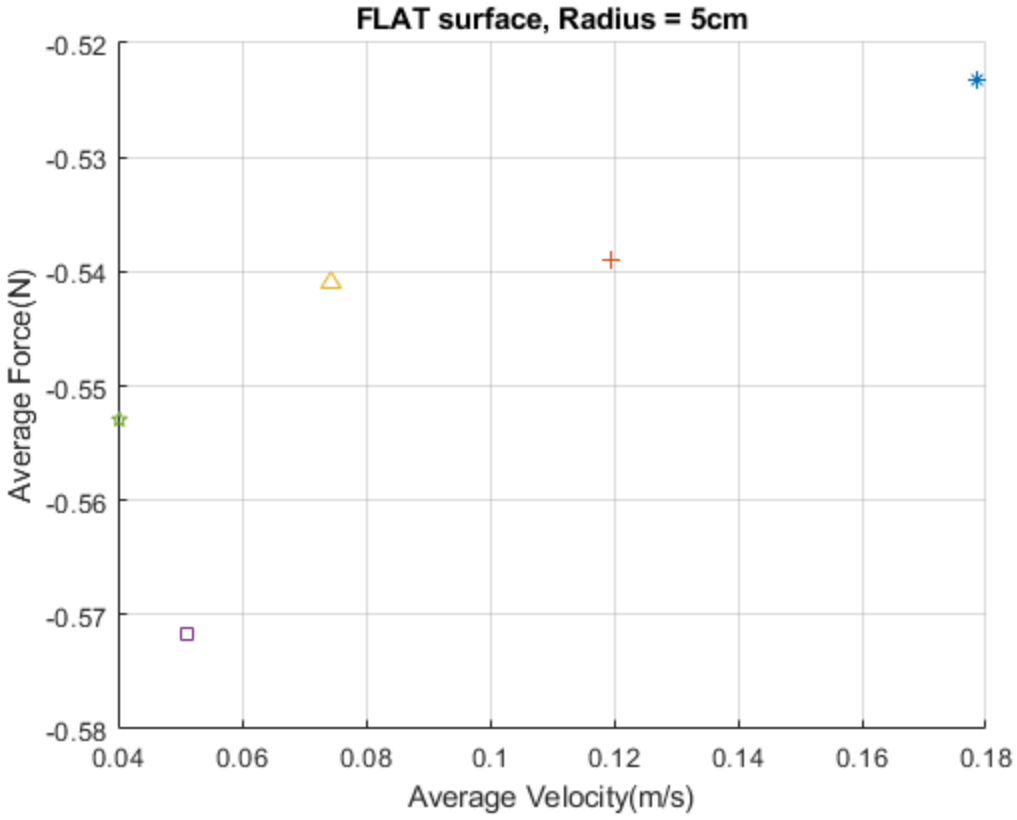
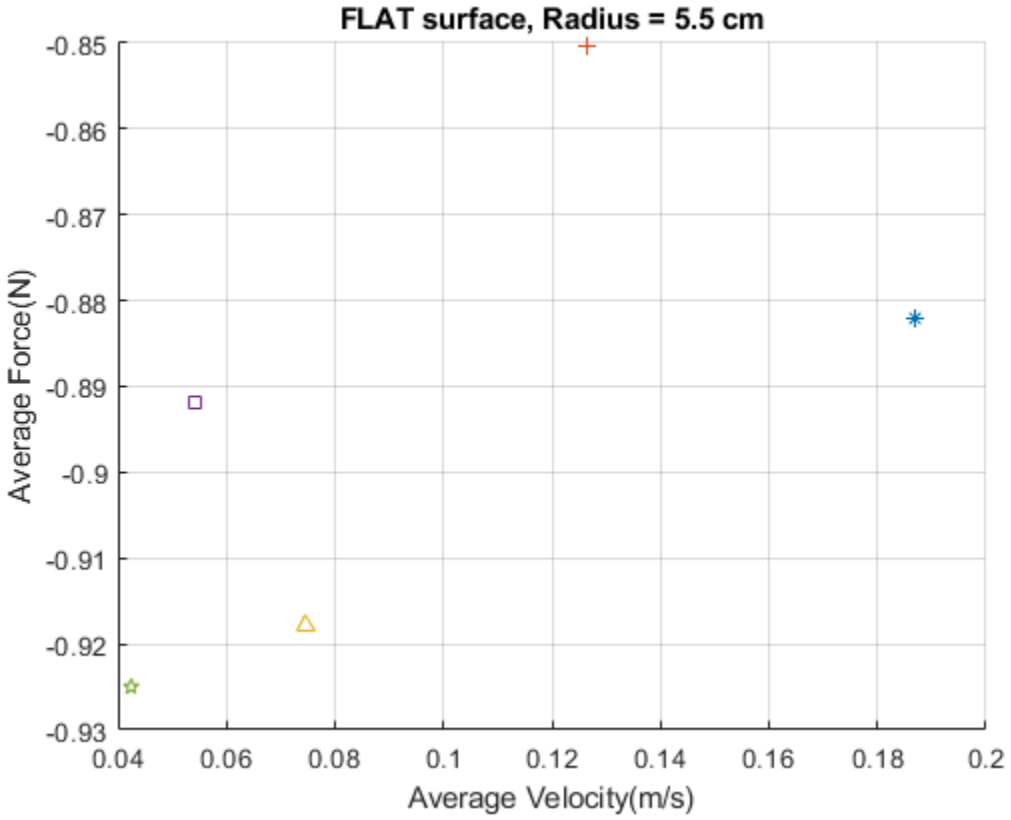
```
figure(1)
hold on; grid on;
plot(mean(data.FC50.T3.xdAct(1100:1900,1)),
 mean(data.FC50.T3.Force(1100:1900,3)),'*')
plot(mean(data.FC50.T4.xdAct(1100:2700,1)),
 mean(data.FC50.T4.Force(1100:2700,3)),'+')
plot(mean(data.FC50.T6.xdAct(1500:3900,1)),
 mean(data.FC50.T6.Force(1500:3900,3)),'^')
plot(mean(data.FC50.T8.xdAct(2000:5400,1)),
 mean(data.FC50.T8.Force(2000:5400,3)),'square')
plot(mean(data.FC50.T10.xdAct(2500:7000,1)),
 mean(data.FC50.T10.Force(2500:7000,3)),'p')
% legend('time=3','time=4','time=5','time=8','time=10')
xlabel('Average Velocity(m/s)')
ylabel('Average Force(N)')
title('FLAT surface, Radius = 5cm')

figure(2)
hold on; grid on;
plot(mean(data.FC55.T3.xdAct(1100:1900,1)),
 mean(data.FC55.T3.Force(1100:1900,3)),'*')
plot(mean(data.FC55.T4.xdAct(1100:2700,1)),
 mean(data.FC55.T4.Force(1100:2700,3)),'+')
plot(mean(data.FC55.T6.xdAct(1500:3900,1)),
 mean(data.FC55.T6.Force(1500:3900,3)),'^')
plot(mean(data.FC55.T8.xdAct(2000:5400,1)),
 mean(data.FC55.T8.Force(2000:5400,3)),'square')
plot(mean(data.FC55.T10.xdAct(2500:7000,1)),
 mean(data.FC55.T10.Force(2500:7000,3)),'p')
% legend('time=3','time=4','time=5','time=8','time=10')
xlabel('Average Velocity(m/s)')
ylabel('Average Force(N)')
title('FLAT surface, Radius = 5.5 cm')

figure(3)
hold on; grid on;
plot(mean(data.FC60.T3.xdAct(1100:1900,1)),
 mean(data.FC60.T3.Force(1100:1900,3)),'*')
plot(mean(data.FC60.T4.xdAct(1100:2700,1)),
 mean(data.FC60.T4.Force(1100:2700,3)),'+')
plot(mean(data.FC60.T6.xdAct(1500:3900,1)),
 mean(data.FC60.T6.Force(1500:3900,3)),'^')
plot(mean(data.FC60.T8.xdAct(2000:5400,1)),
 mean(data.FC60.T8.Force(2000:5400,3)),'square')
plot(mean(data.FC60.T10.xdAct(2500:7000,1)),
 mean(data.FC60.T10.Force(2500:7000,3)),'p')
% legend('time=3','time=4','time=5','time=8','time=10')
xlabel('Average Velocity(m/s)')
ylabel('Average Force(N)')
title('FLAT surface, Radius = 6 cm')
```

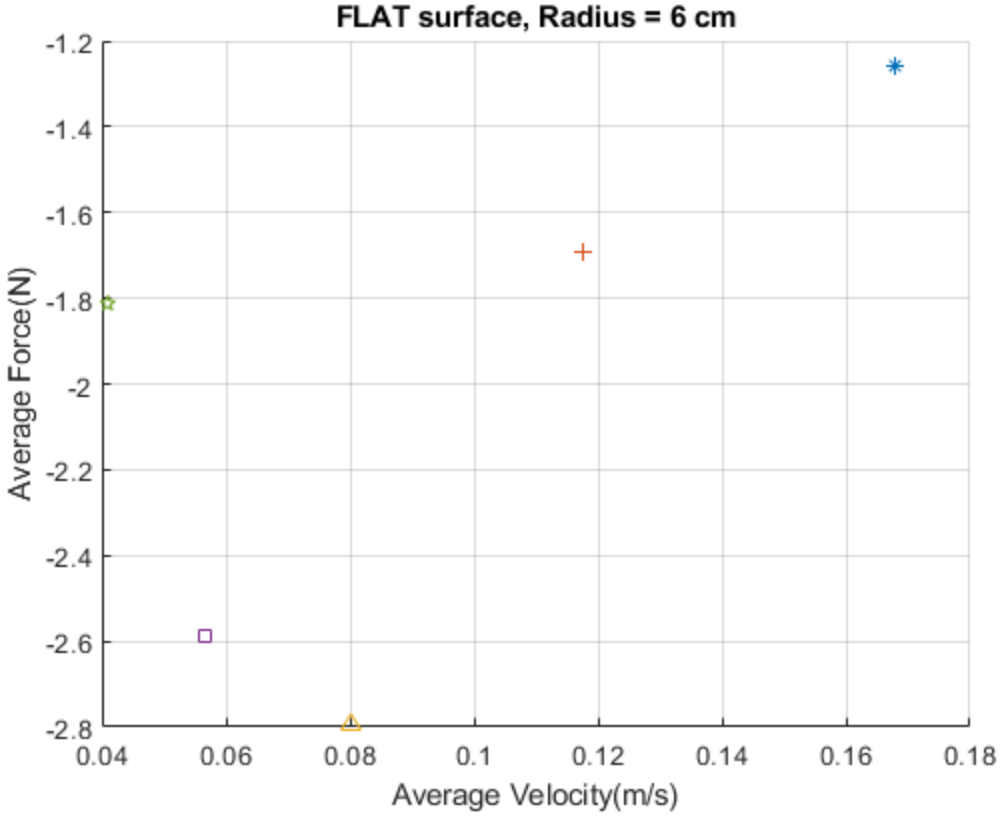
```
figure(4)
hold on; grid on;
plot(mean(data.RC50.T3.xdAct(1100:1900,1)),
 mean(data.RC50.T3.Force(1100:1900,3)),'*')
plot(mean(data.RC50.T4.xdAct(1100:2700,1)),
 mean(data.RC50.T4.Force(1100:2700,3)),'+')
plot(mean(data.RC50.T6.xdAct(1500:3900,1)),
 mean(data.RC50.T6.Force(1500:3900,3)),'^')
plot(mean(data.RC50.T8.xdAct(2000:5400,1)),
 mean(data.RC50.T8.Force(2000:5400,3)),'square')
plot(mean(data.RC50.T10.xdAct(2500:7000,1)),
 mean(data.RC50.T10.Force(2500:7000,3)),'p')
% legend('time=3','time=4','time=5','time=8','time=10')
xlabel('Average Velocity(m/s)')
ylabel('Average Force(N)')
title('RAMP surface, Radius = 5cm')


figure(5)
hold on; grid on;
plot(mean(data.RC55.T3.xdAct(1100:1900,1)),
 mean(data.RC55.T3.Force(1100:1900,3)),'*')
plot(mean(data.RC55.T4.xdAct(1100:2700,1)),
 mean(data.RC55.T4.Force(1100:2700,3)),'+')
plot(mean(data.RC55.T6.xdAct(1500:3900,1)),
 mean(data.RC55.T6.Force(1500:3900,3)),'^')
plot(mean(data.RC55.T8.xdAct(2000:5400,1)),
 mean(data.RC55.T8.Force(2000:5400,3)),'square')
plot(mean(data.RC55.T10.xdAct(2500:7000,1)),
 mean(data.RC55.T10.Force(2500:7000,3)),'p')
% legend('time=3','time=4','time=5','time=8','time=10')
xlabel('Average Velocity(m/s)')
ylabel('Average Force(N)')
title('RAMP surface, Radius = 5.5 cm')


figure(6)
hold on; grid on;
plot(mean(data.RC60.T3.xdAct(1100:1900,1)),
 mean(data.RC60.T3.Force(1100:1900,3)),'*')
plot(mean(data.RC60.T4.xdAct(1100:2700,1)),
 mean(data.RC60.T4.Force(1100:2700,3)),'+')
plot(mean(data.RC60.T6.xdAct(1500:3900,1)),
 mean(data.RC60.T6.Force(1500:3900,3)),'^')
plot(mean(data.RC60.T8.xdAct(2000:5400,1)),
 mean(data.RC60.T8.Force(2000:5400,3)),'square')
plot(mean(data.RC60.T10.xdAct(2500:7000,1)),
 mean(data.RC60.T10.Force(2500:7000,3)),'p')
% legend('time=3','time=4','time=5','time=8','time=10')
xlabel('Average Velocity(m/s)')
ylabel('Average Force(N)')
title('RAMP surface, Radius = 6 cm')

%%%%
```

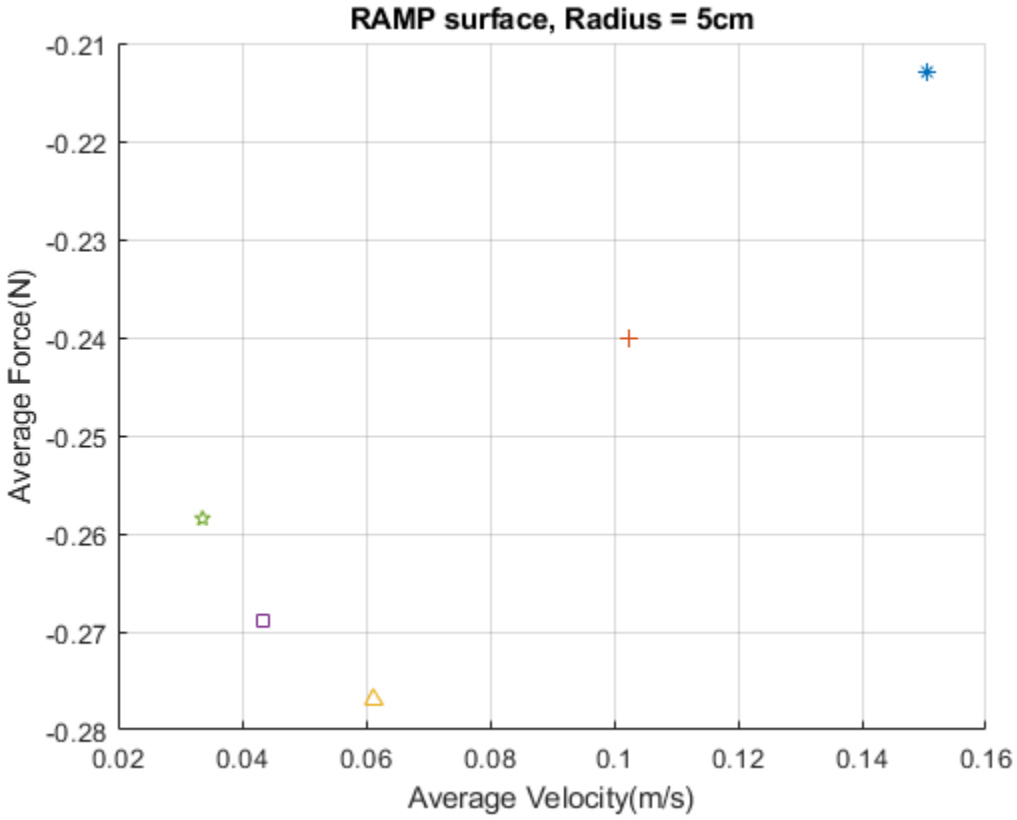
```
figure(7)
hold on; grid on;
plot(mean(data.FC50.T3.xdAct(1100:1900,1)),
 std(data.FC50.T3.Force(1100:1900,3)),'*')
plot(mean(data.FC50.T4.xdAct(1100:2700,1)),
 std(data.FC50.T4.Force(1100:2700,3)),'+')
plot(mean(data.FC50.T6.xdAct(1500:3900,1)),
 std(data.FC50.T6.Force(1500:3900,3)),'^')
plot(mean(data.FC50.T8.xdAct(2000:5400,1)),
 std(data.FC50.T8.Force(2000:5400,3)),'square')
plot(mean(data.FC50.T10.xdAct(2500:7000,1)),
 std(data.FC50.T10.Force(2500:7000,3)),'p')
% legend('time=3','time=4','time=5','time=8','time=10')
xlabel('Average Velocity(m/s)')
ylabel('Standart Deviation Force(N)')
title('FLAT surface, Radius = 5cm')

figure(8)
hold on; grid on;
plot(mean(data.FC55.T3.xdAct(1100:1900,1)),
 std(data.FC55.T3.Force(1100:1900,3)),'*')
plot(mean(data.FC55.T4.xdAct(1100:2700,1)),
 std(data.FC55.T4.Force(1100:2700,3)),'+')
plot(mean(data.FC55.T6.xdAct(1500:3900,1)),
 std(data.FC55.T6.Force(1500:3900,3)),'^')
plot(mean(data.FC55.T8.xdAct(2000:5400,1)),
 std(data.FC55.T8.Force(2000:5400,3)),'square')
plot(mean(data.FC55.T10.xdAct(2500:7000,1)),
 std(data.FC55.T10.Force(2500:7000,3)),'p')
% legend('time=3','time=4','time=5','time=8','time=10')
xlabel('Average Velocity(m/s)')
ylabel('Standart Deviation Force(N)')
title('FLAT surface, Radius = 5.5 cm')

figure(9)
hold on; grid on;
plot(mean(data.FC60.T3.xdAct(1100:1900,1)),
 std(data.FC60.T3.Force(1100:1900,3)),'*')
plot(mean(data.FC60.T4.xdAct(1100:2700,1)),
 std(data.FC60.T4.Force(1100:2700,3)),'+')
plot(mean(data.FC60.T6.xdAct(1500:3900,1)),
 std(data.FC60.T6.Force(1500:3900,3)),'^')
plot(mean(data.FC60.T8.xdAct(2000:5400,1)),
 std(data.FC60.T8.Force(2000:5400,3)),'square')
plot(mean(data.FC60.T10.xdAct(2500:7000,1)),
 std(data.FC60.T10.Force(2500:7000,3)),'p')
% legend('time=3','time=4','time=5','time=8','time=10')
xlabel('Average Velocity(m/s)')
ylabel('Standart Deviation Force(N)')
title('FLAT surface, Radius = 6 cm')


figure(10)
hold on; grid on;
```

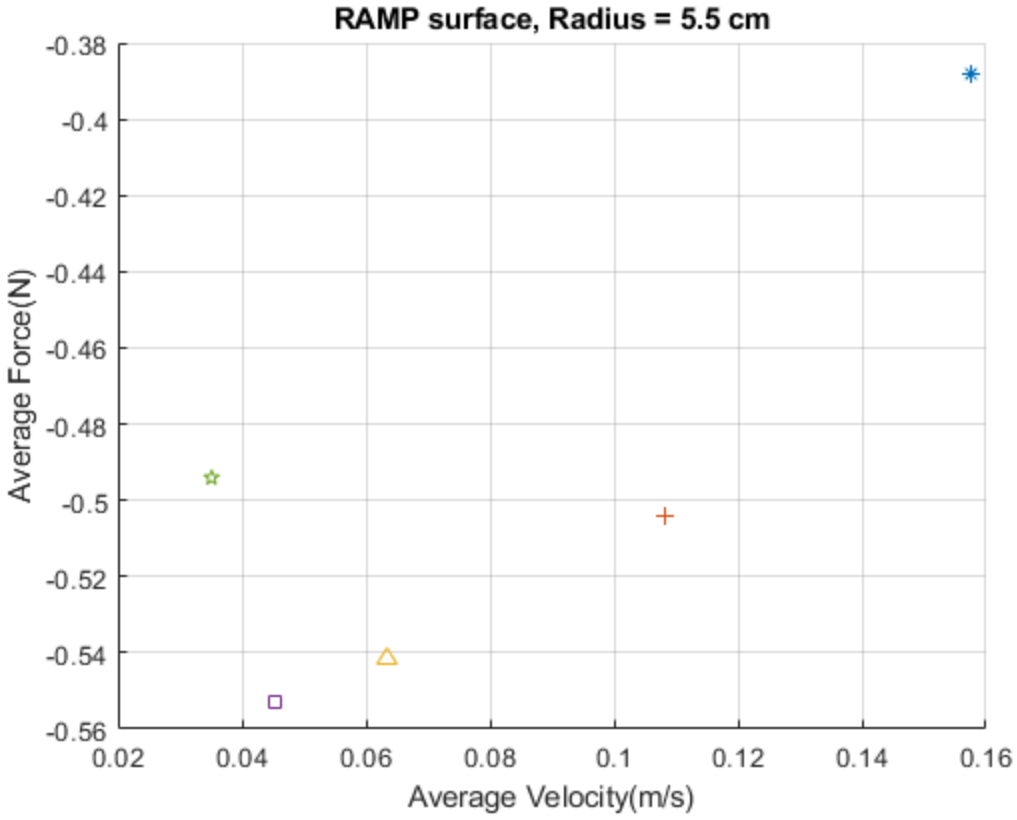
```
plot(mean(data.RC50.T3.xdAct(1100:1900,1)),
 std(data.RC50.T3.Force(1100:1900,3)),'*')
plot(mean(data.RC50.T4.xdAct(1100:2700,1)),
 std(data.RC50.T4.Force(1100:2700,3)),'+')
plot(mean(data.RC50.T6.xdAct(1500:3900,1)),
 std(data.RC50.T6.Force(1500:3900,3)),'^')
plot(mean(data.RC50.T8.xdAct(2000:5400,1)),
 std(data.RC50.T8.Force(2000:5400,3)),'square')
plot(mean(data.RC50.T10.xdAct(2500:7000,1)),
 std(data.RC50.T10.Force(2500:7000,3)),'p')
% legend('time=3','time=4','time=5','time=8','time=10')
xlabel('Average Velocity(m/s)')
ylabel('Standart Deviation Force(N)')
title('RAMP surface, Radius = 5cm')


figure(11)
hold on; grid on;
plot(mean(data.RC55.T3.xdAct(1100:1900,1)),
 std(data.RC55.T3.Force(1100:1900,3)),'*')
plot(mean(data.RC55.T4.xdAct(1100:2700,1)),
 std(data.RC55.T4.Force(1100:2700,3)),'+')
plot(mean(data.RC55.T6.xdAct(1500:3900,1)),
 std(data.RC55.T6.Force(1500:3900,3)),'^')
plot(mean(data.RC55.T8.xdAct(2000:5400,1)),
 std(data.RC55.T8.Force(2000:5400,3)),'square')
plot(mean(data.RC55.T10.xdAct(2500:7000,1)),
 std(data.RC55.T10.Force(2500:7000,3)),'p')
% legend('time=3','time=4','time=5','time=8','time=10')
xlabel('Average Velocity(m/s)')
ylabel('Standart Deviation Force(N)')
title('RAMP surface, Radius = 5.5 cm')


figure(12)
hold on; grid on;
plot(mean(data.RC60.T3.xdAct(1100:1900,1)),
 std(data.RC60.T3.Force(1100:1900,3)),'*')
plot(mean(data.RC60.T4.xdAct(1100:2700,1)),
 std(data.RC60.T4.Force(1100:2700,3)),'+')
plot(mean(data.RC60.T6.xdAct(1500:3900,1)),
 std(data.RC60.T6.Force(1500:3900,3)),'^')
plot(mean(data.RC60.T8.xdAct(2000:5400,1)),
 std(data.RC60.T8.Force(2000:5400,3)),'square')
plot(mean(data.RC60.T10.xdAct(2500:7000,1)),
 std(data.RC60.T10.Force(2500:7000,3)),'p')
% legend('time=3','time=4','time=5','time=8','time=10')
xlabel('Average Velocity(m/s)')
ylabel('Standart Deviation Force(N)')
title('RAMP surface, Radius = 6 cm')
```

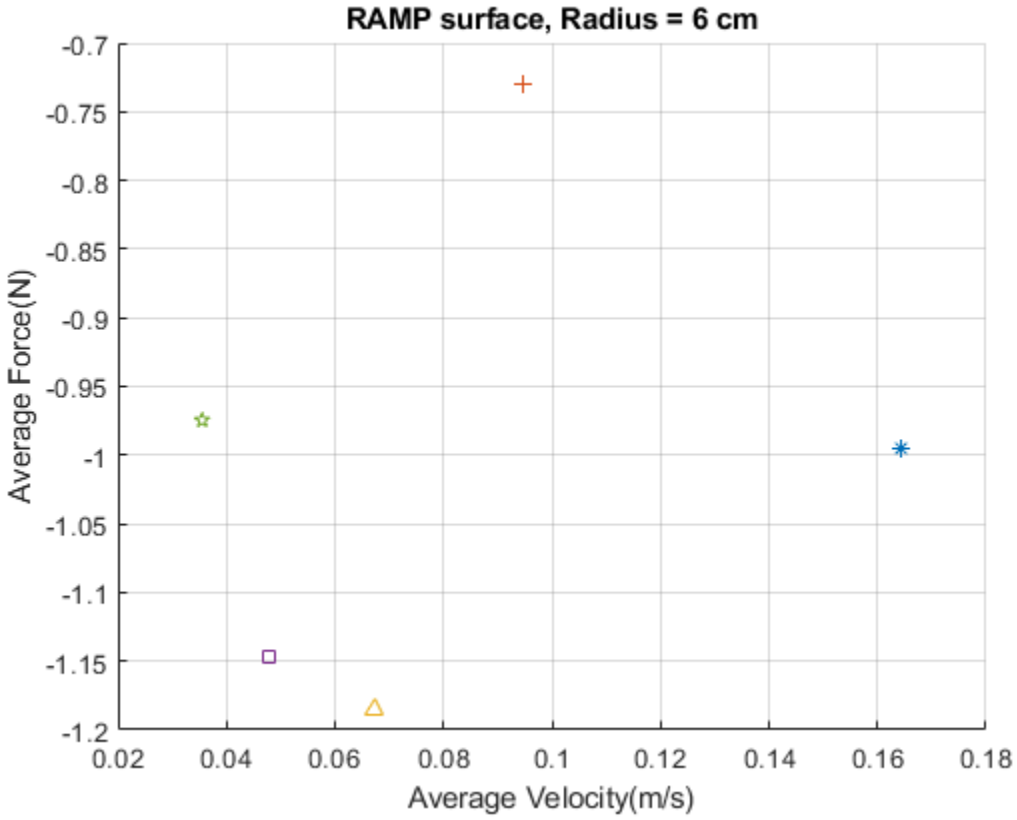

FLAT surface, Radius = 5cm
-0.52
-0.53
-0.54
-0.55
-0.56
-0.57
-0.58
Average Force(N)
0.04
0.06
0.08
0.1
0.12
0.14
0.16
0.18
Average Velocity(m/s)

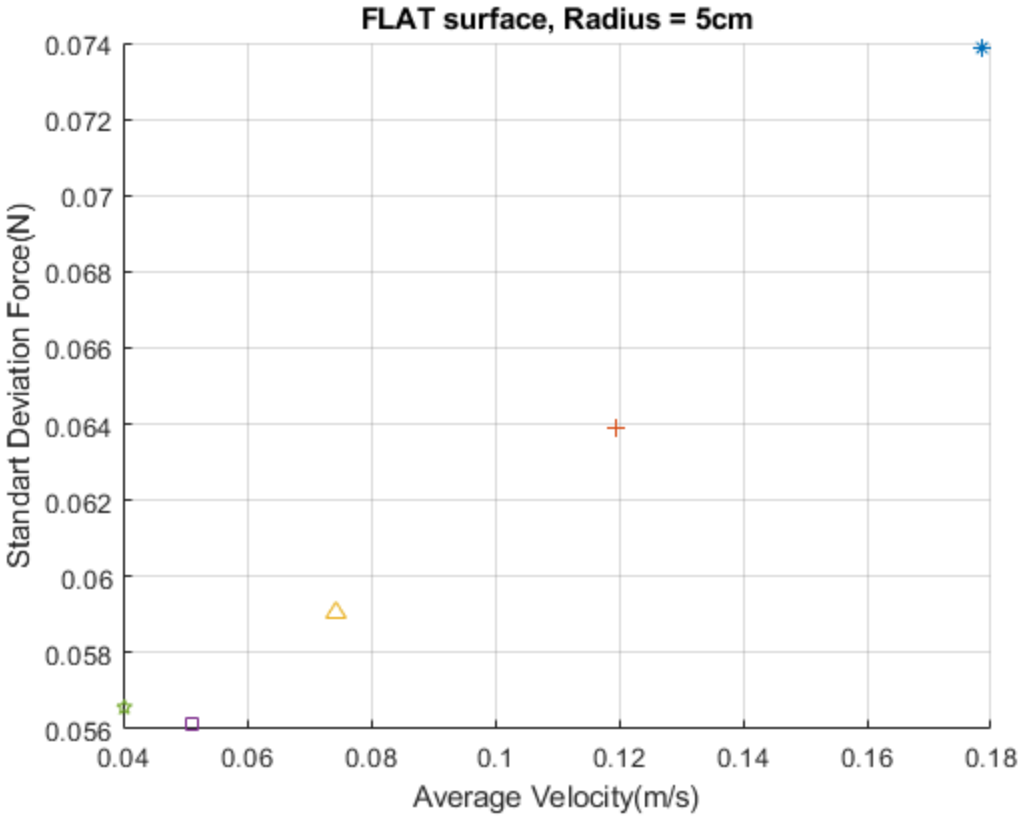

FLAT surface, Radius = 5.5 cm
-0.85
-0.86
-0.87
-0.88
-0.89
-0.9
-0.91
-0.92
-0.93
Average Force(N)
0.04
0.06
0.08
0.1
0.12
0.14
0.16
0.18
0.2
Average Velocity(m/s)

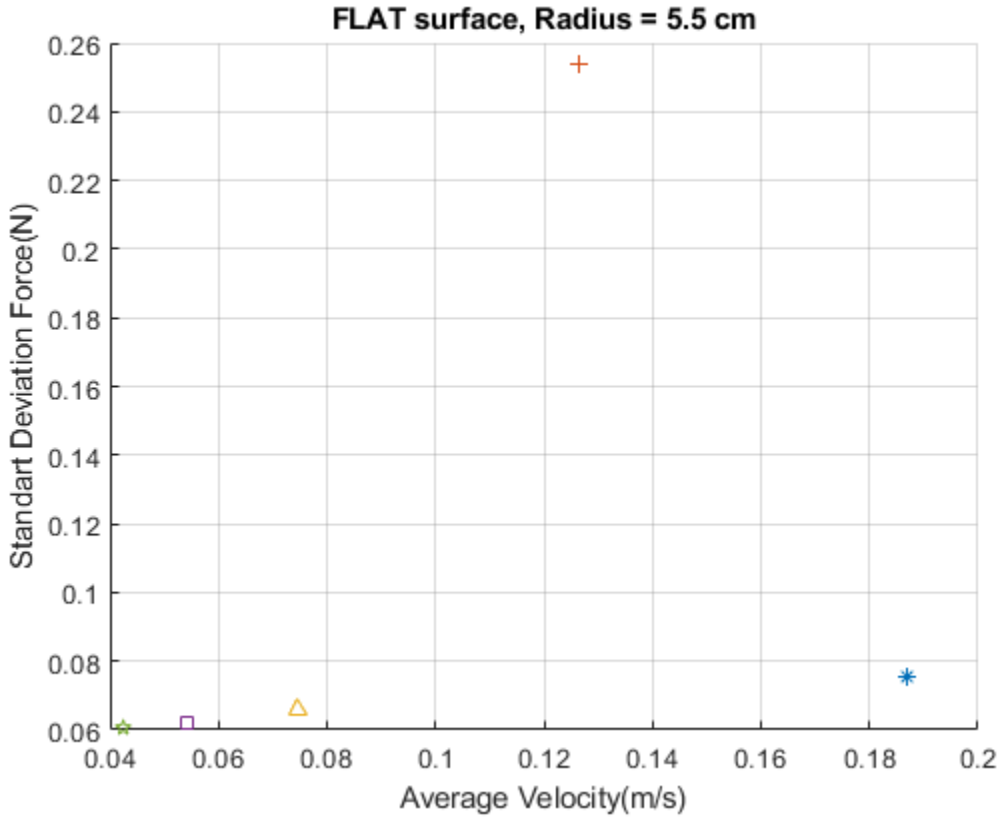

FLAT surface, Radius = 6 cm
Average Force(N)
-1.2
-1.4
-1.6
-1.8
-2
-2.2
-2.4
-2.6
-2.8
0.04
0.06
0.08
0.1
0.12
0.14
0.16
0.18
Average Velocity(m/s)

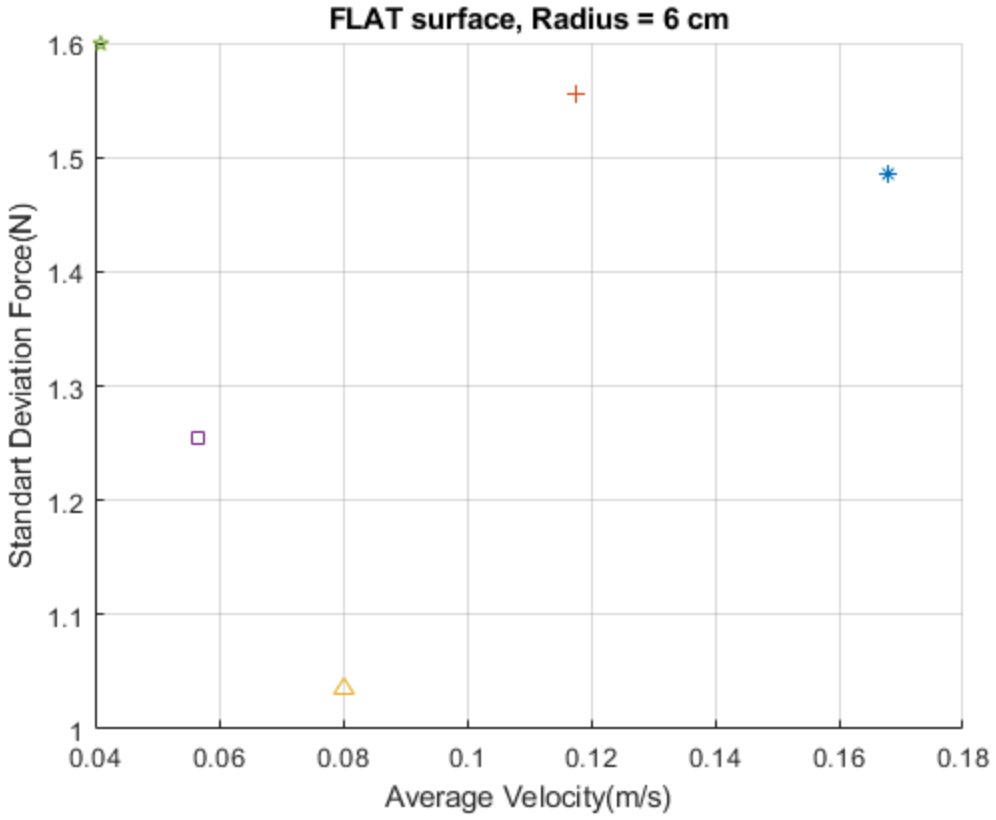

RAMP surface, Radius = 5cm
Average Force(N)
-0.21
-0.22
-0.23
-0.24
-0.25
-0.26
-0.27
-0.28
0.02
0.04
0.06
0.08
0.1
0.12
0.14
0.16
Average Velocity(m/s)

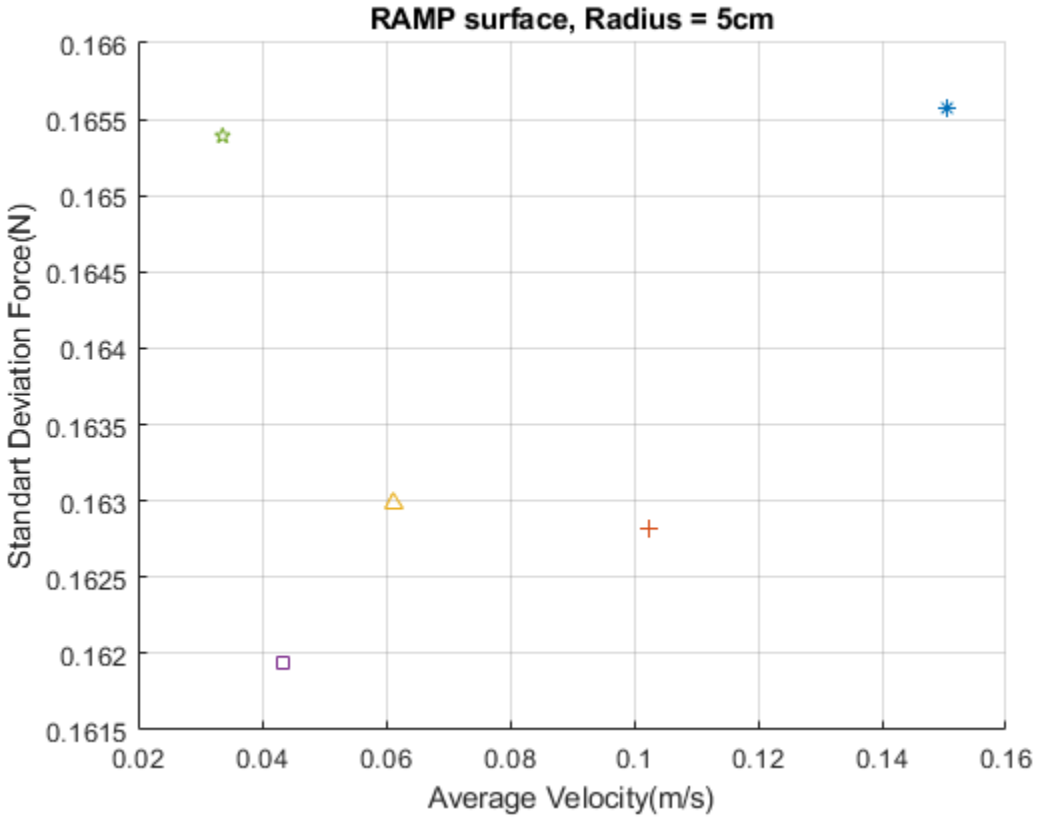

RAMP surface, Radius = 5.5 cm
Average Force(N)
-0.38
-0.4
-0.42
-0.44
-0.46
-0.48
-0.5
-0.52
-0.54
-0.56
0.02
0.04
0.06
0.08
0.1
0.12
0.14
0.16
Average Velocity(m/s)

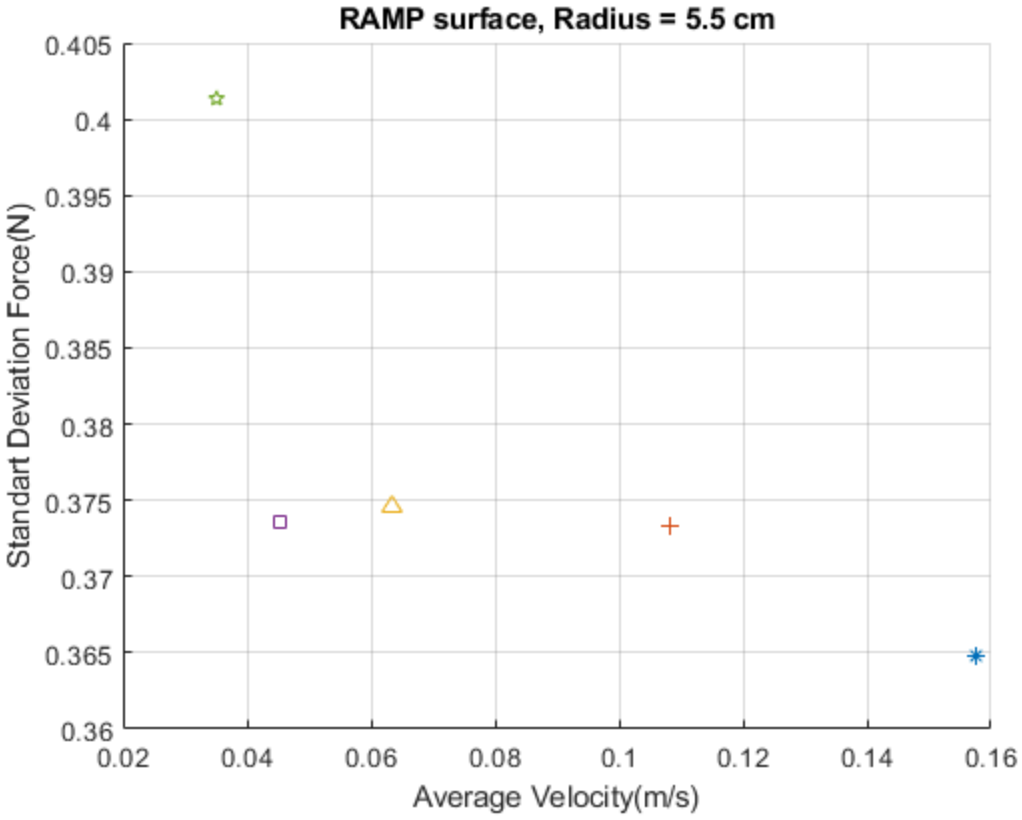

RAMP surface, Radius = 6 cm
Average Force(N)
-0.7
-0.75
-0.8
-0.85
-0.9
-0.95
-1
-1.05
-1.1
-1.15
-1.2
0.02
0.04
0.06
0.08
0.1
0.12
0.14
0.16
0.18
Average Velocity(m/s)

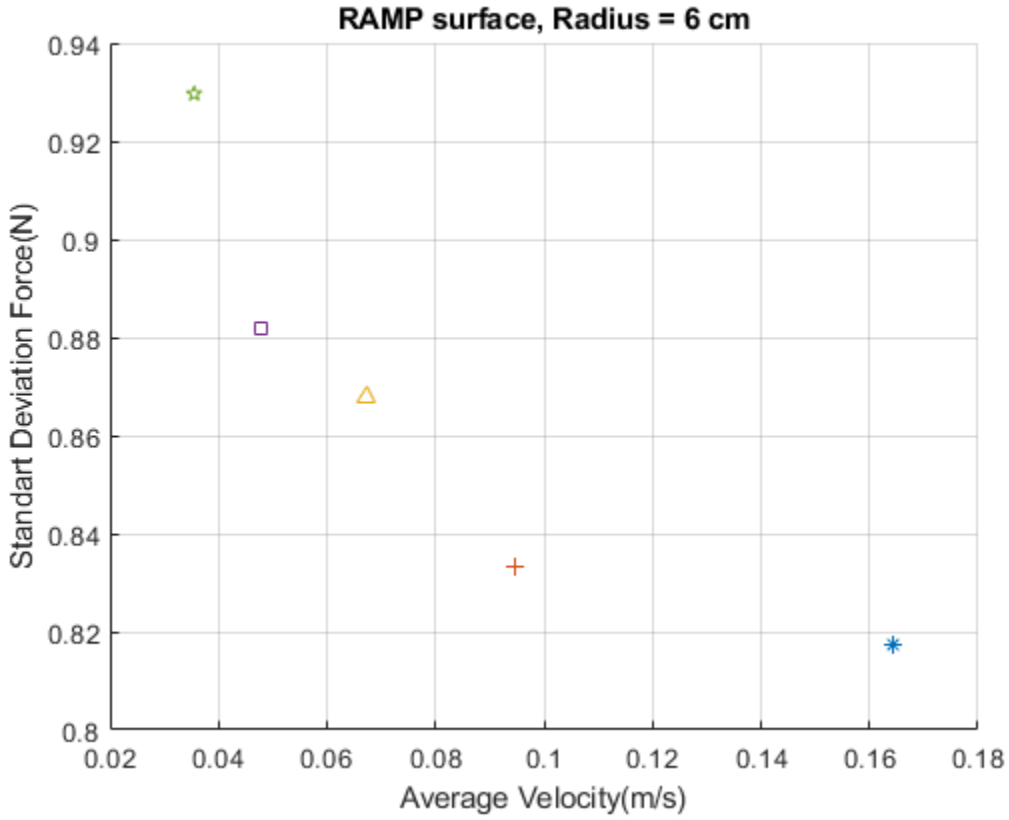

FLAT surface, Radius = 5cm
Standart Deviation Force(N)
0.074
0.072
0.07
0.068
0.066
0.064
0.062
0.06
0.058
0.056
0.04
0.06
0.08
0.1
0.12
0.14
0.16
0.18
Average Velocity(m/s)


FLAT surface, Radius = 5.5 cm
Standart Deviation Force(N)
0.26
0.24
0.22
0.2
0.18
0.16
0.14
0.12
0.1
0.08
0.06
0.04
0.06
0.08
0.1
0.12
0.14
0.16
0.18
0.2
Average Velocity(m/s)


FLAT surface, Radius = 6 cm
Standart Deviation Force(N)
1.6
1.5
1.4
1.3
1.2
1.1
1
0.04
0.06
0.08
0.1
0.12
0.14
0.16
0.18
Average Velocity(m/s)


RAMP surface, Radius = 5cm
Standart Deviation Force(N)
0.166
0.1655
0.165
0.1645
0.164
0.1635
0.163
0.1625
0.162
0.1615
0.02
0.04
0.06
0.08
0.1
0.12
0.14
0.16
Average Velocity(m/s)


RAMP surface, Radius = 5.5 cm
Standart Deviation Force(N)
0.405
0.4
0.395
0.39
0.385
0.38
0.375
0.37
0.365
0.36
0.02
0.04
0.06
0.08
0.1
0.12
0.14
0.16
Average Velocity(m/s)


RAMP surface, Radius = 6 cm
Standart Deviation Force(N)
0.94
0.92
0.9
0.88
0.86
0.84
0.82
0.8
0.02
0.04
0.06
0.08
0.1
0.12
0.14
0.16
0.18
Average Velocity(m/s)

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