



Kinematics Report

Simulation Author: Robert Horvath

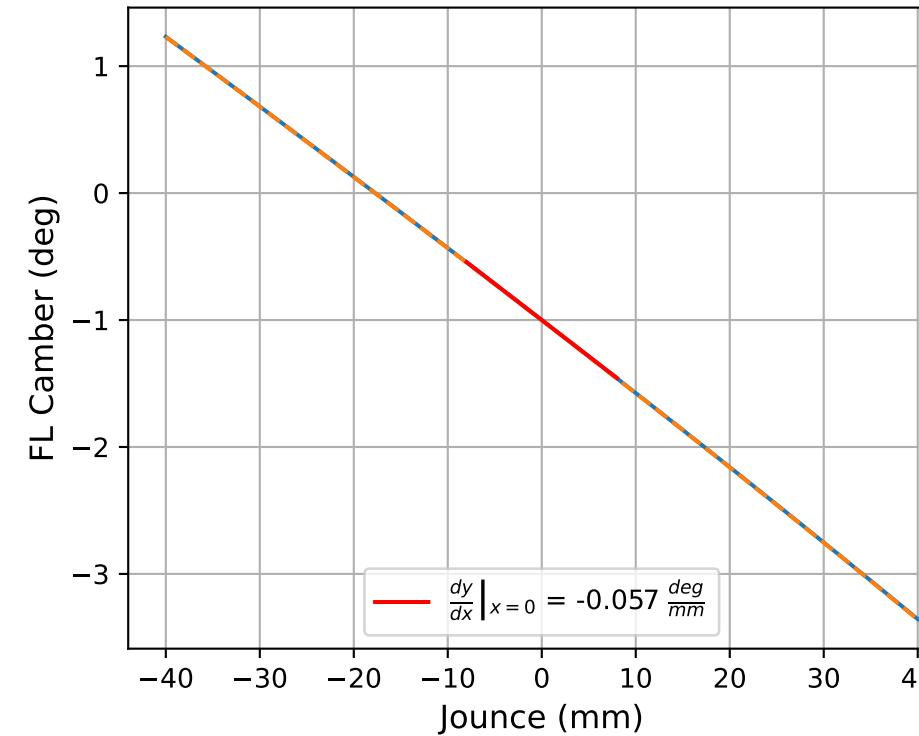
Generated By: Robert (roberthorvath5@gmail.com)

Date: 2025-07-11, 12:49 AM PDT

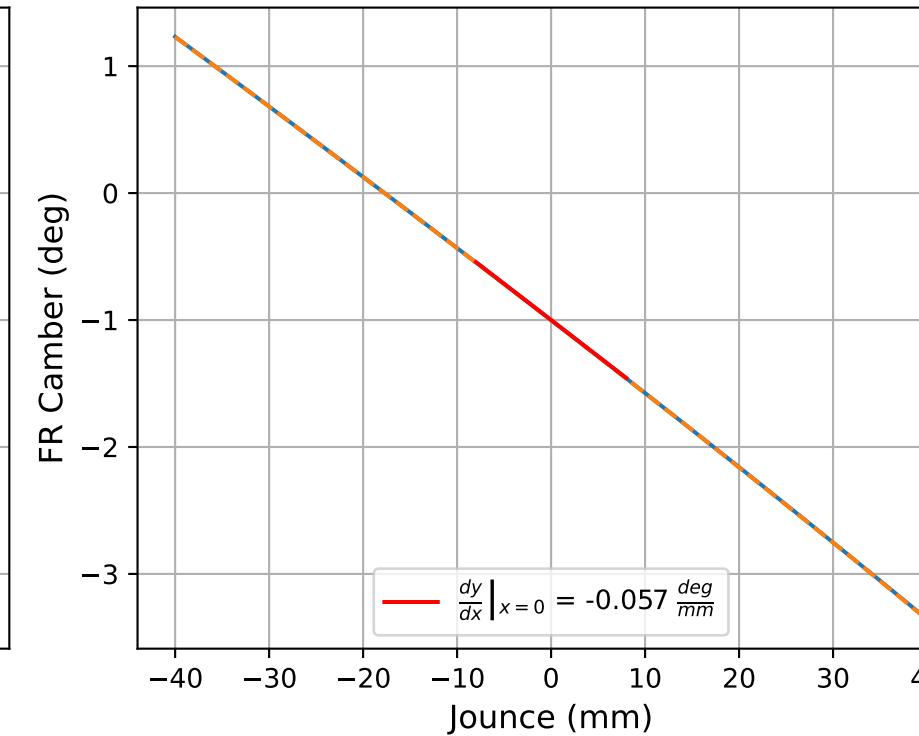
Note 1: Linear fits are tangent lines about $x = 0$ (NOT fits over the entire range)

Note 2: Cubic fits are performed over the entire visible domain (fits over the entire range)

FL Bump Camber



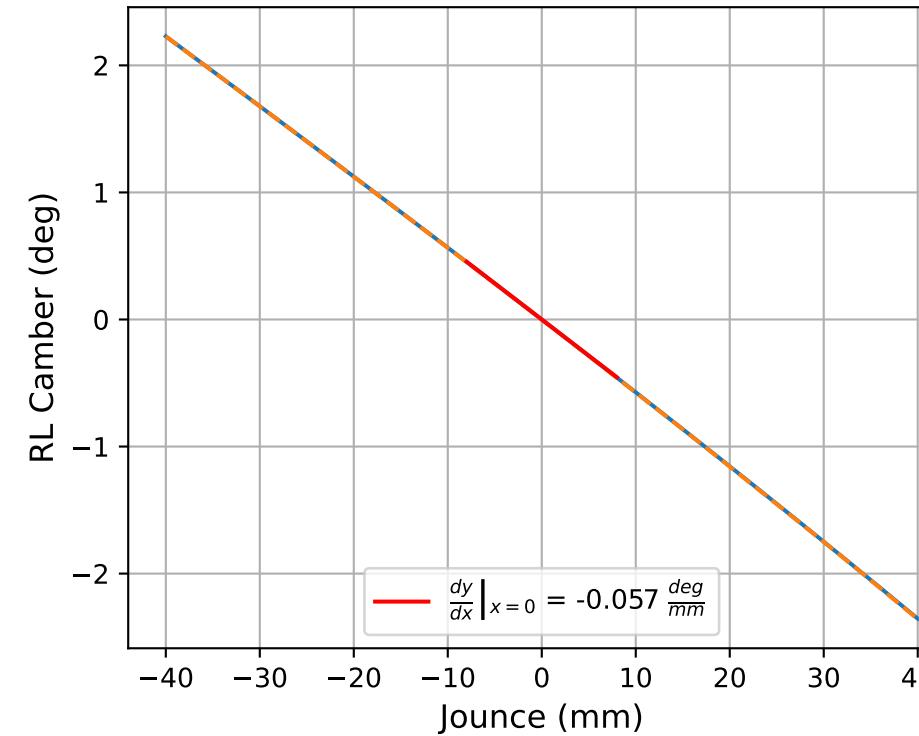
FR Bump Camber

**Linear Fit**

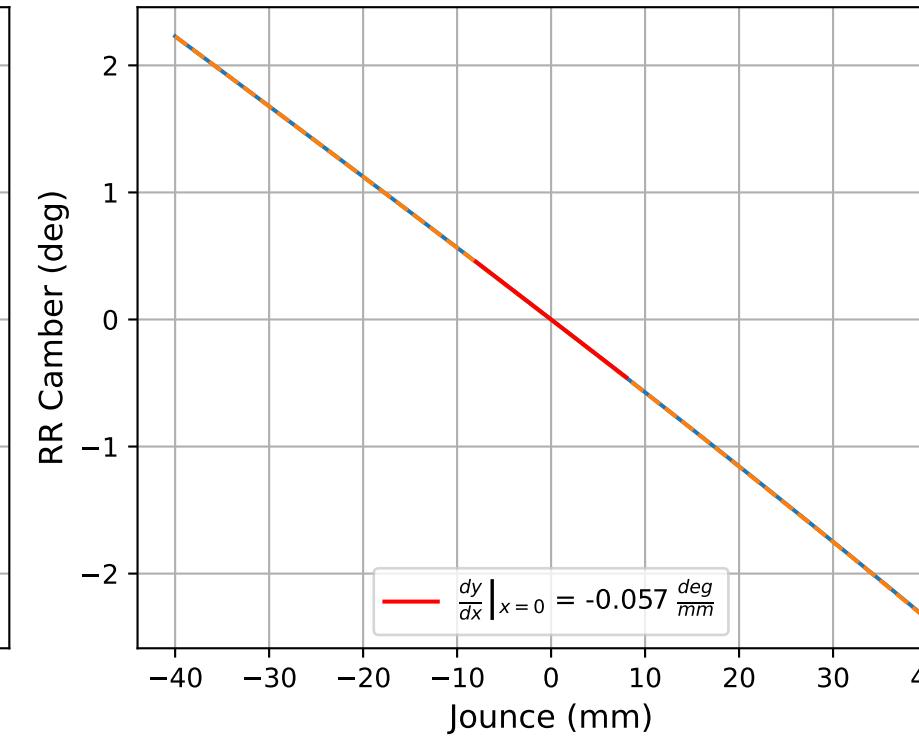
$$f(x) = a_1x + a_0$$

FL	$f(x) = -0.057x + -1.0$
FR	$f(x) = -0.057x + -1.0$
RL	$f(x) = -0.057x + 0.0$
RR	$f(x) = -0.057x + 0.0$

RL Bump Camber



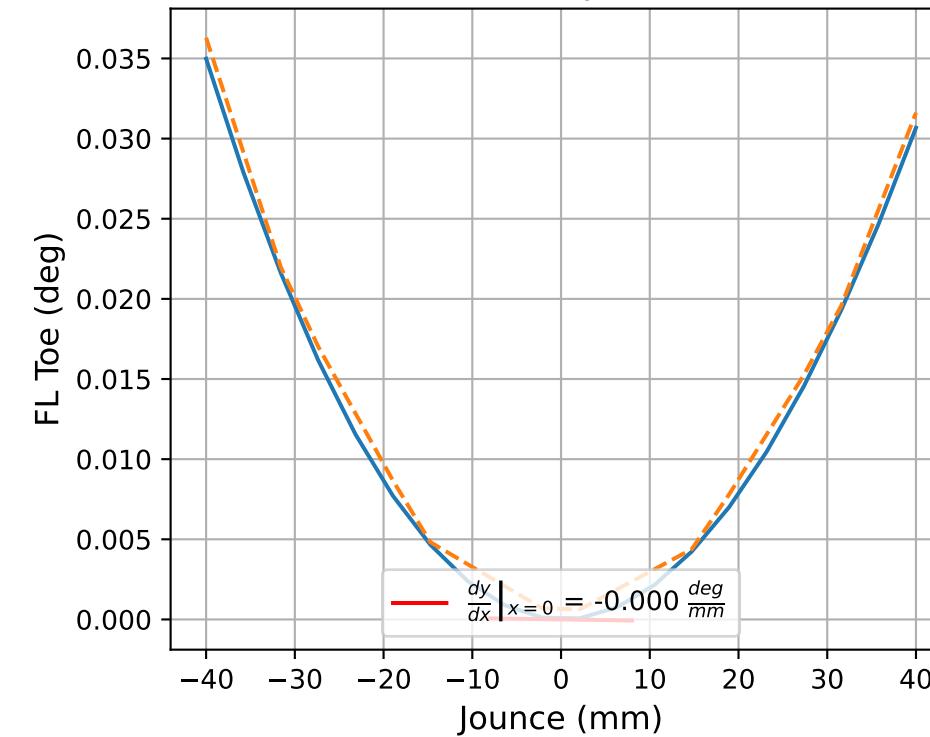
RR Bump Camber

**Cubic Fit**

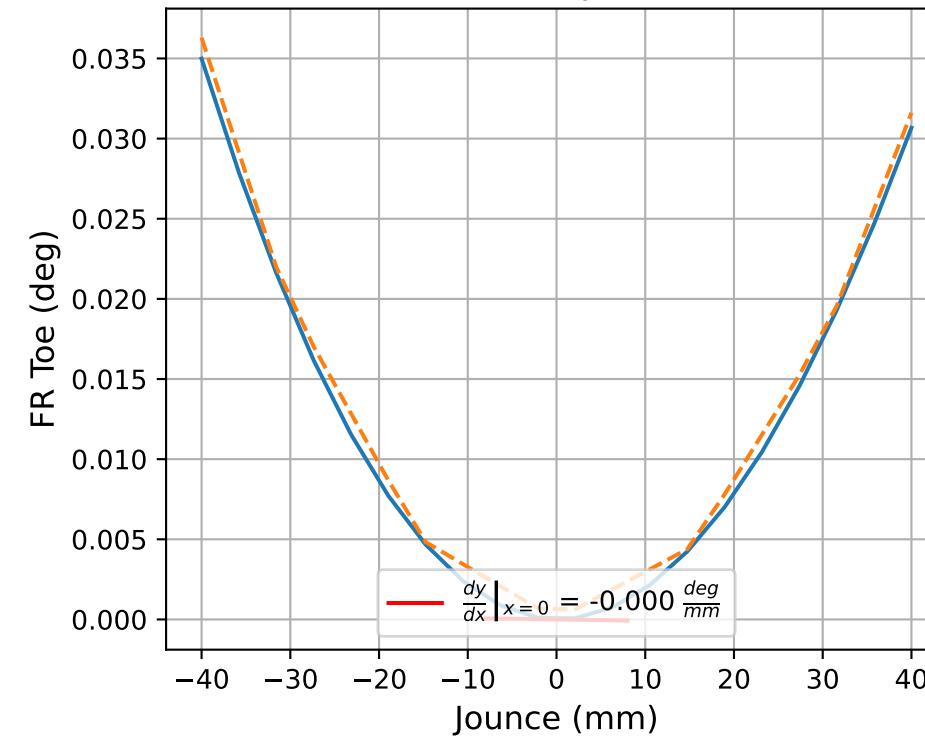
$$f(x) = a_3x^3 + a_2x^2 + a_1x + a_0$$

FL	$f(x) = -0.0x^3 + -0.0x^2 + -0.057x + -1.0$
FR	$f(x) = -0.0x^3 + -0.0x^2 + -0.057x + -1.0$
RL	$f(x) = -0.0x^3 + -0.0x^2 + -0.057x + 0.0$
RR	$f(x) = -0.0x^3 + -0.0x^2 + -0.057x + 0.0$

FL Bump Toe



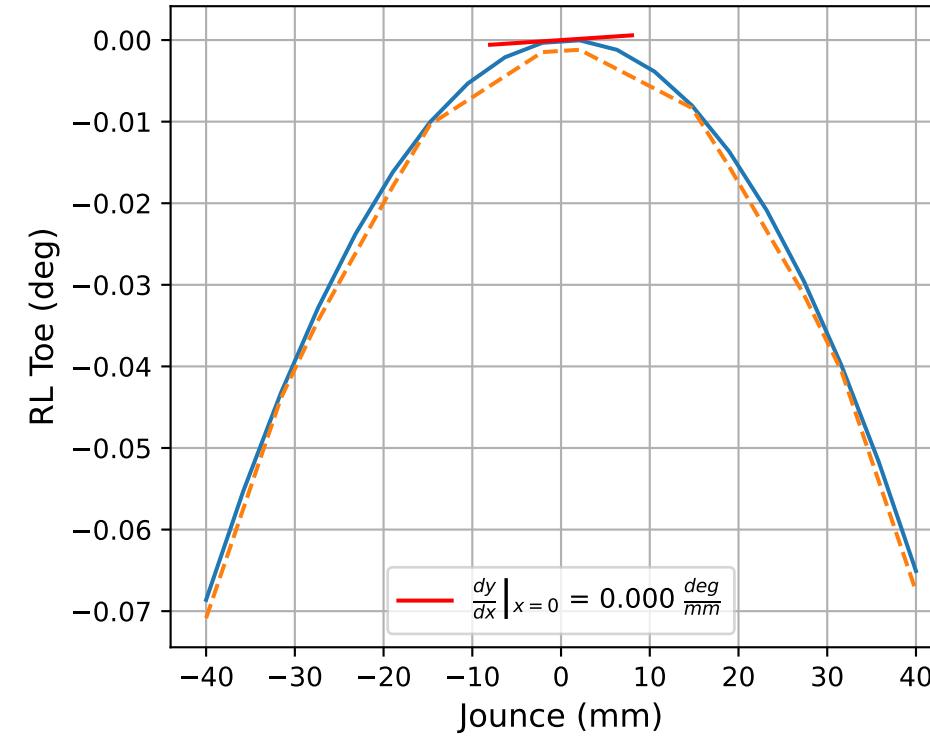
FR Bump Toe

**Linear Fit**

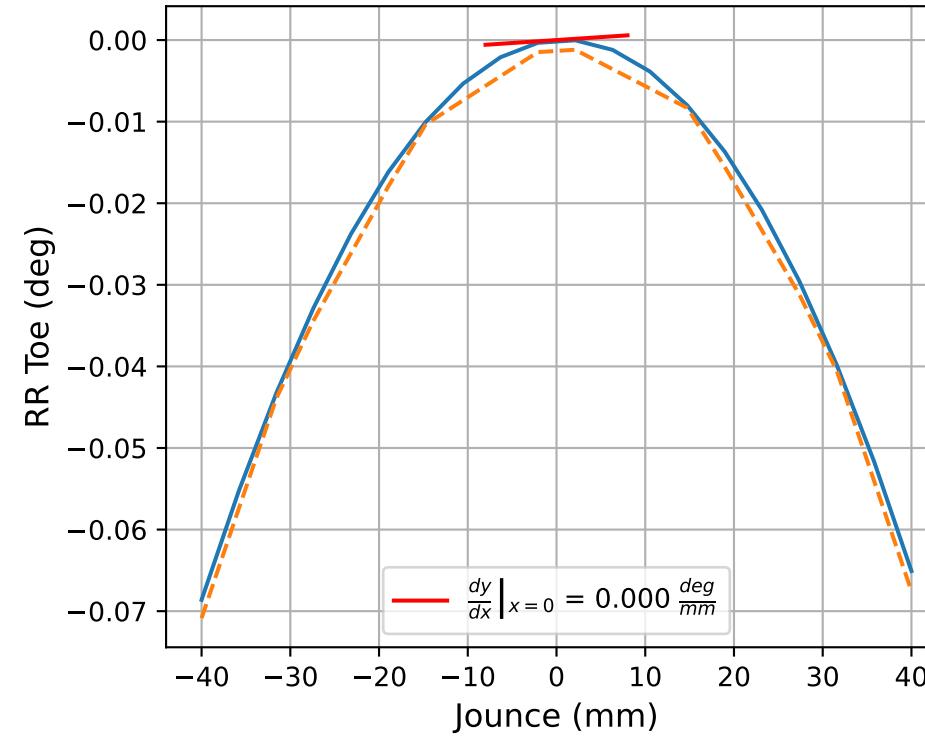
$$f(x) = a_1x + a_0$$

FL	$f(x) = -0.0x + -0.0$
FR	$f(x) = -0.0x + -0.0$
RL	$f(x) = 0.0x + 0.0$
RR	$f(x) = 0.0x + 0.0$

RL Bump Toe



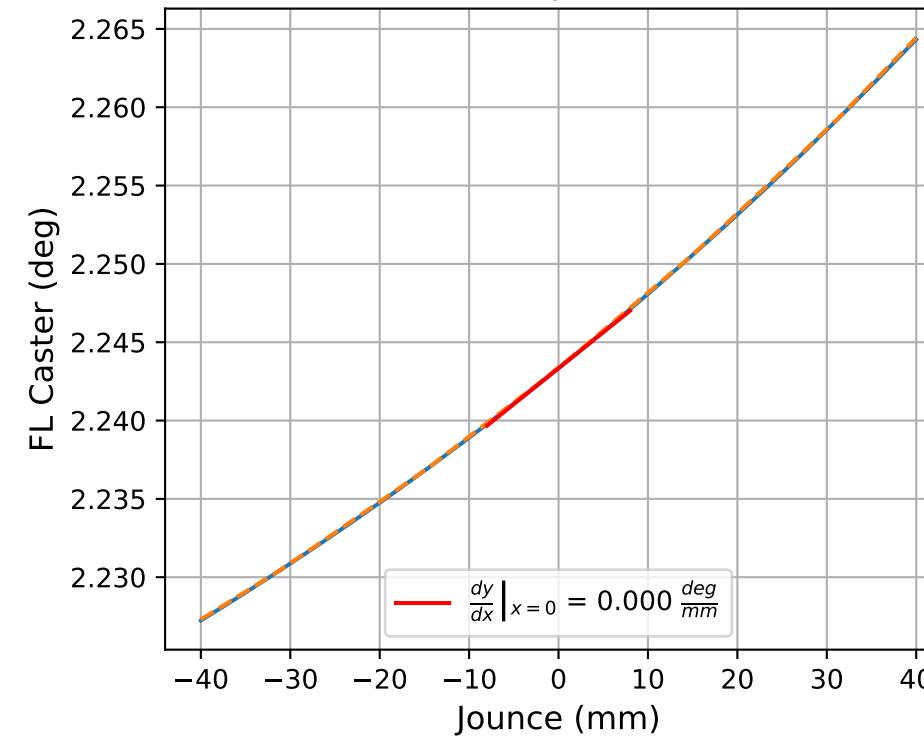
RR Bump Toe

**Cubic Fit**

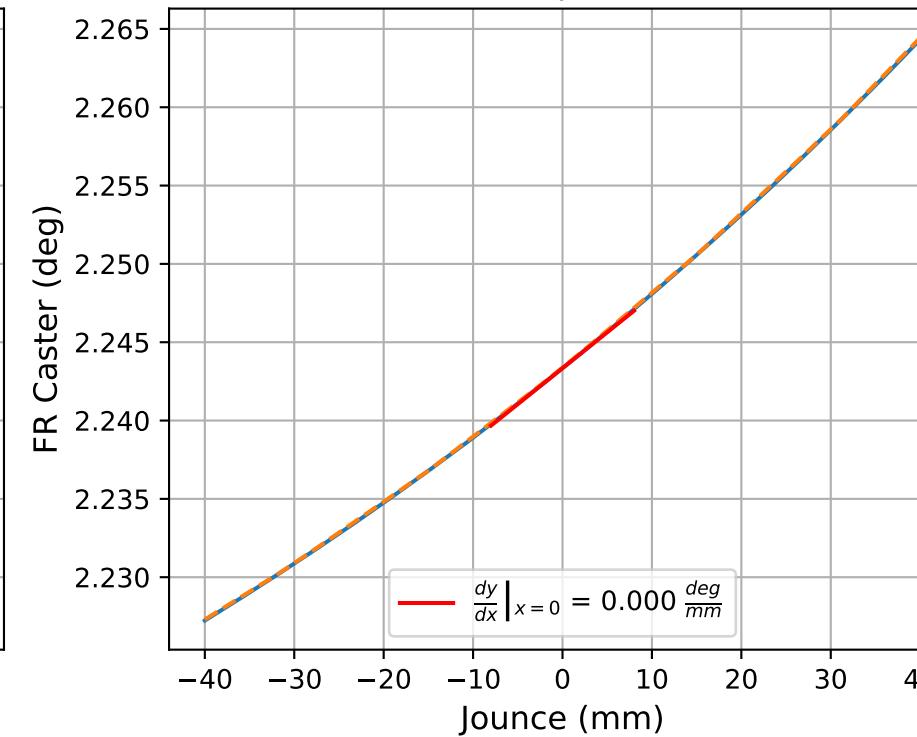
$$f(x) = a_3x^3 + a_2x^2 + a_1x + a_0$$

FL	$f(x) = -0.0x^3 + 0.0x^2 + -0.0x + -0.0$
FR	$f(x) = -0.0x^3 + 0.0x^2 + -0.0x + -0.0$
RL	$f(x) = -0.0x^3 + -0.0x^2 + 0.0x + 0.0$
RR	$f(x) = -0.0x^3 + -0.0x^2 + 0.0x + 0.0$

FL Bump Caster



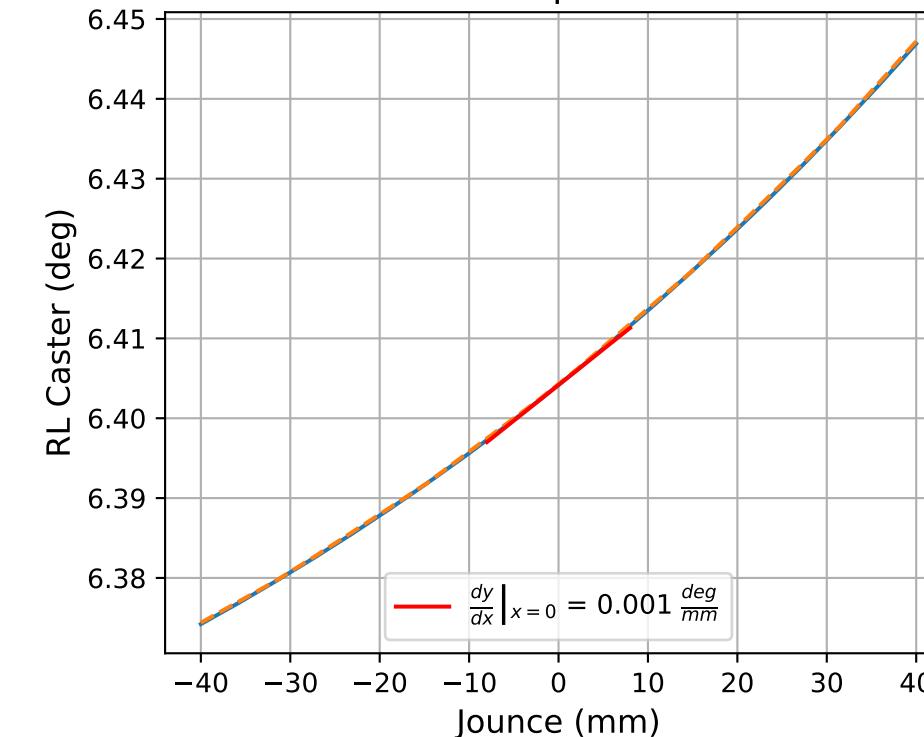
FR Bump Caster

**Linear Fit**

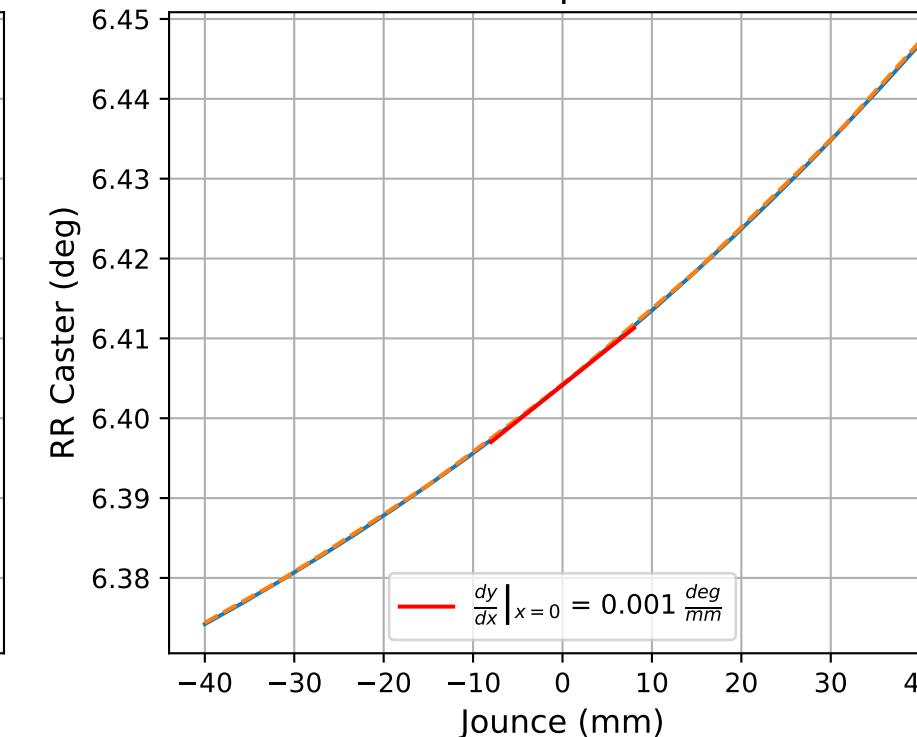
$$f(x) = a_1x + a_0$$

FL	$f(x) = 0.0x + 2.243$
FR	$f(x) = 0.0x + 2.243$
RL	$f(x) = 0.001x + 6.404$
RR	$f(x) = 0.001x + 6.404$

RL Bump Caster

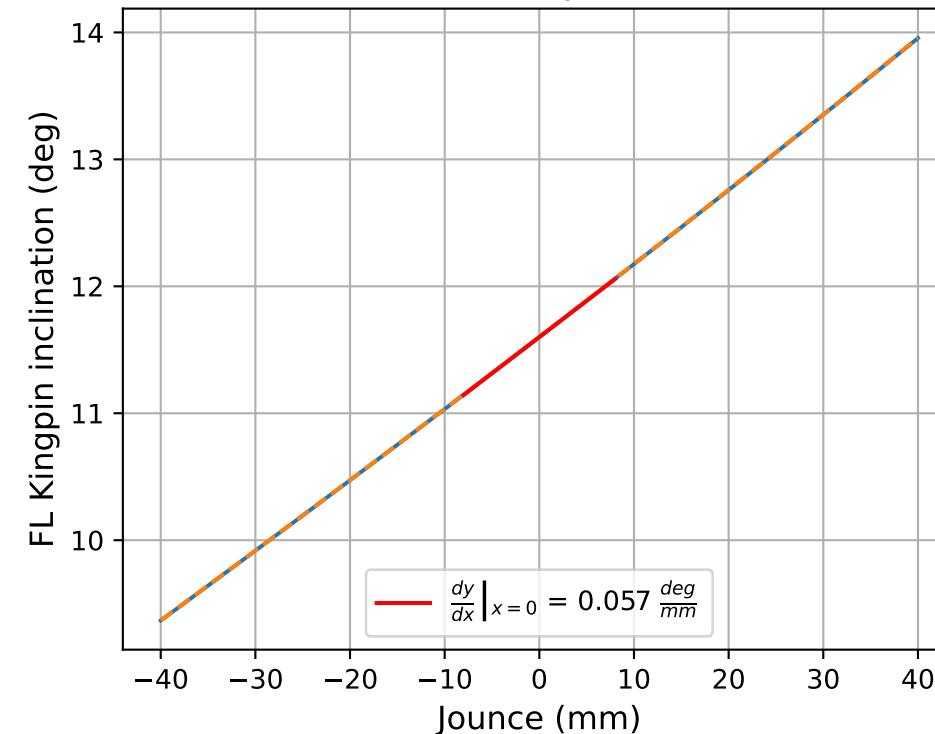
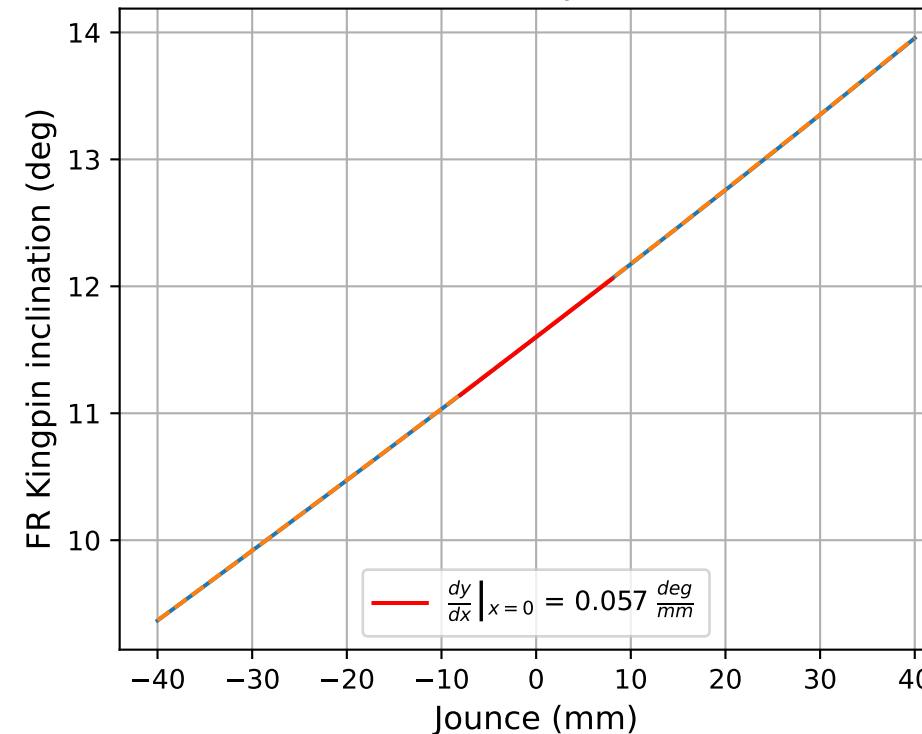


RR Bump Caster

**Cubic Fit**

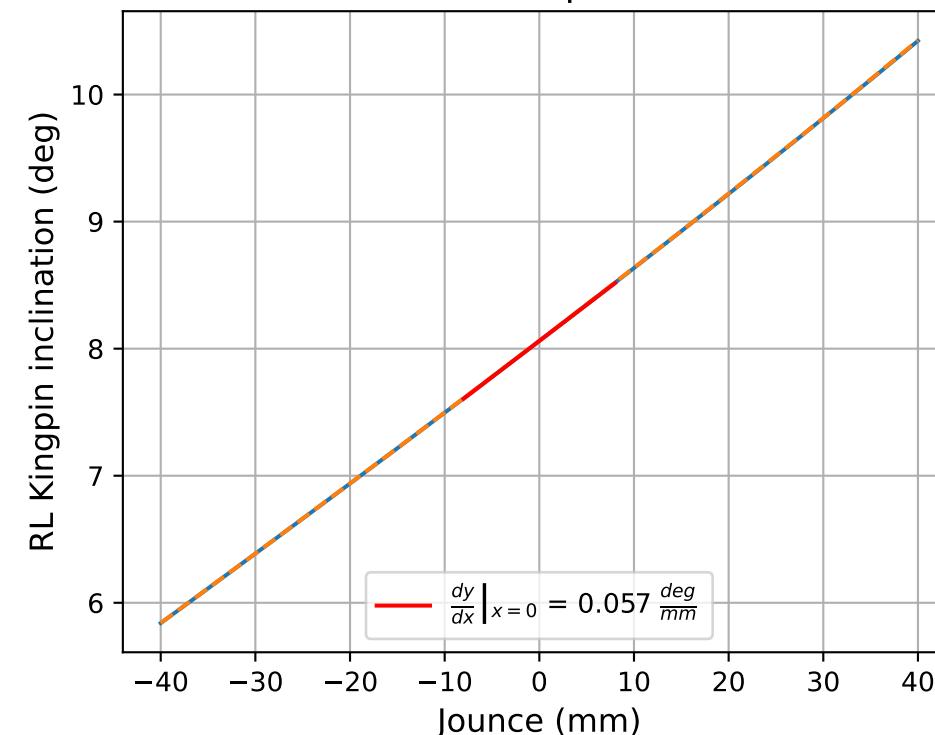
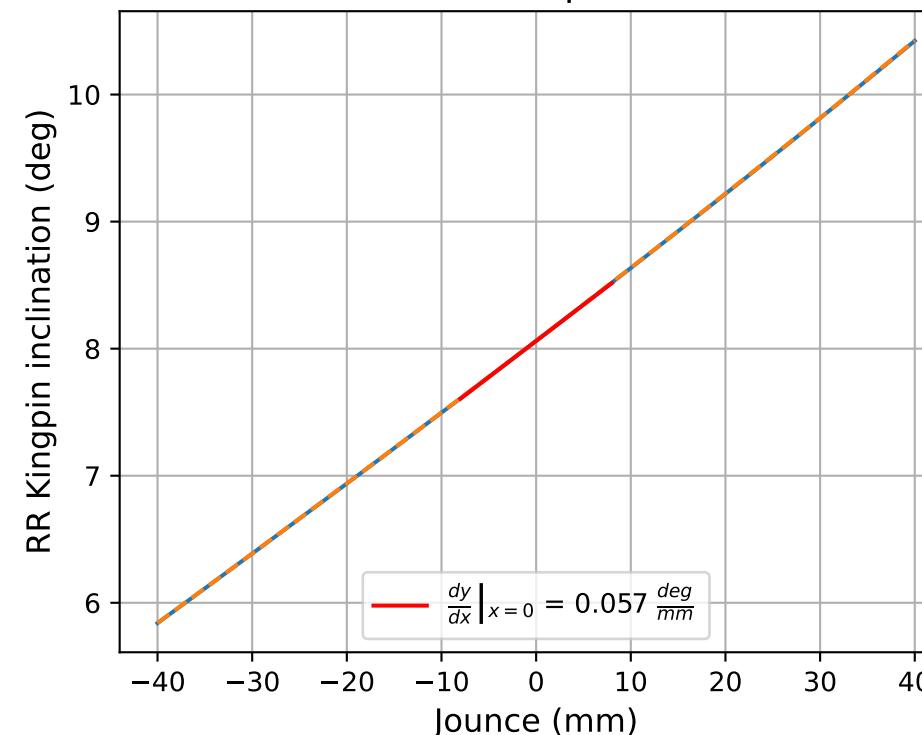
$$f(x) = a_3x^3 + a_2x^2 + a_1x + a_0$$

FL	$f(x) = 0.0x^3 + 0.0x^2 + 0.0x + 2.243$
FR	$f(x) = 0.0x^3 + 0.0x^2 + 0.0x + 2.243$
RL	$f(x) = 0.0x^3 + 0.0x^2 + 0.001x + 6.404$
RR	$f(x) = 0.0x^3 + 0.0x^2 + 0.001x + 6.404$

FL Bump KPI**FR Bump KPI****Linear Fit**

$$f(x) = a_1x + a_0$$

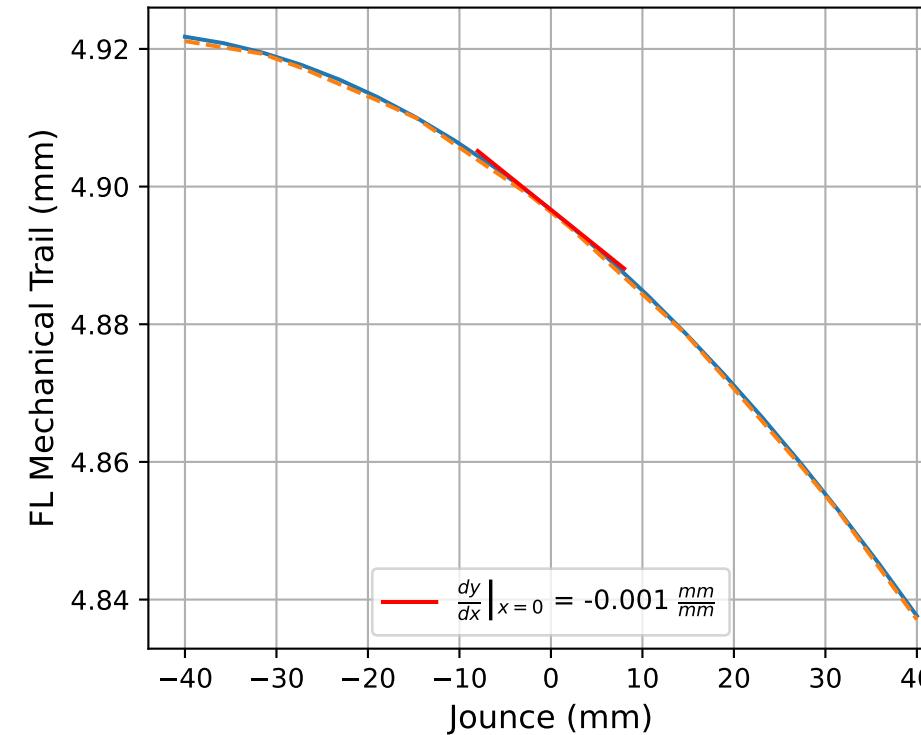
FL	$f(x) = 0.057x + 11.6$
FR	$f(x) = 0.057x + 11.6$
RL	$f(x) = 0.057x + 8.061$
RR	$f(x) = 0.057x + 8.061$

RL Bump KPI**RR Bump KPI****Cubic Fit**

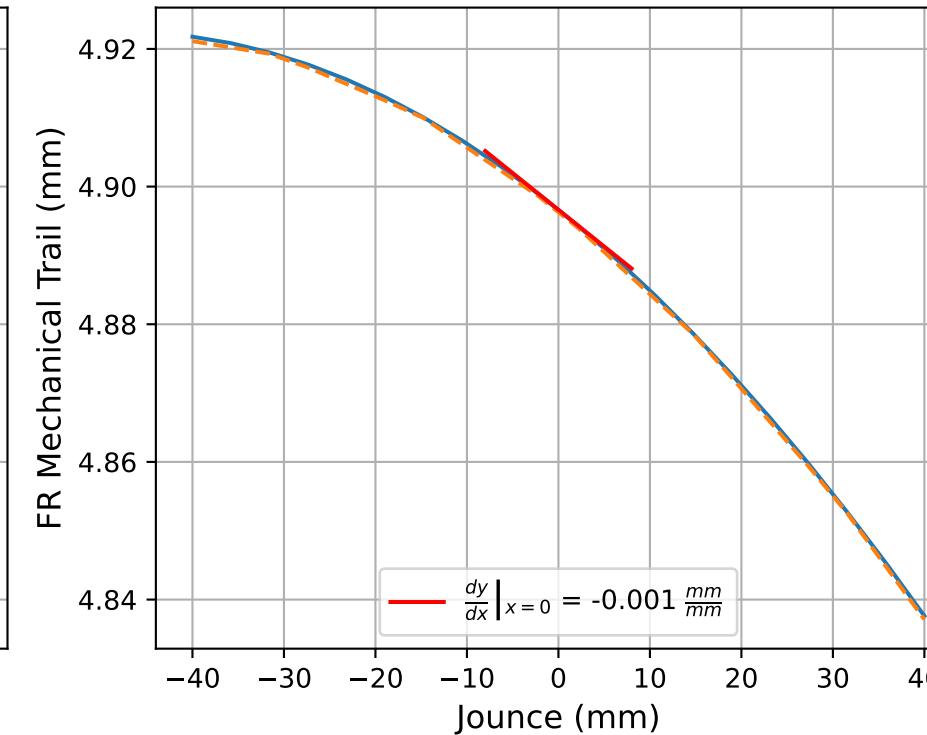
$$f(x) = a_3x^3 + a_2x^2 + a_1x + a_0$$

FL	$f(x) = 0.0x^3 + 0.0x^2 + 0.057x + 11.6$
FR	$f(x) = 0.0x^3 + 0.0x^2 + 0.057x + 11.6$
RL	$f(x) = 0.0x^3 + 0.0x^2 + 0.057x + 8.061$
RR	$f(x) = 0.0x^3 + 0.0x^2 + 0.057x + 8.061$

FL Bump Mechanical Trail



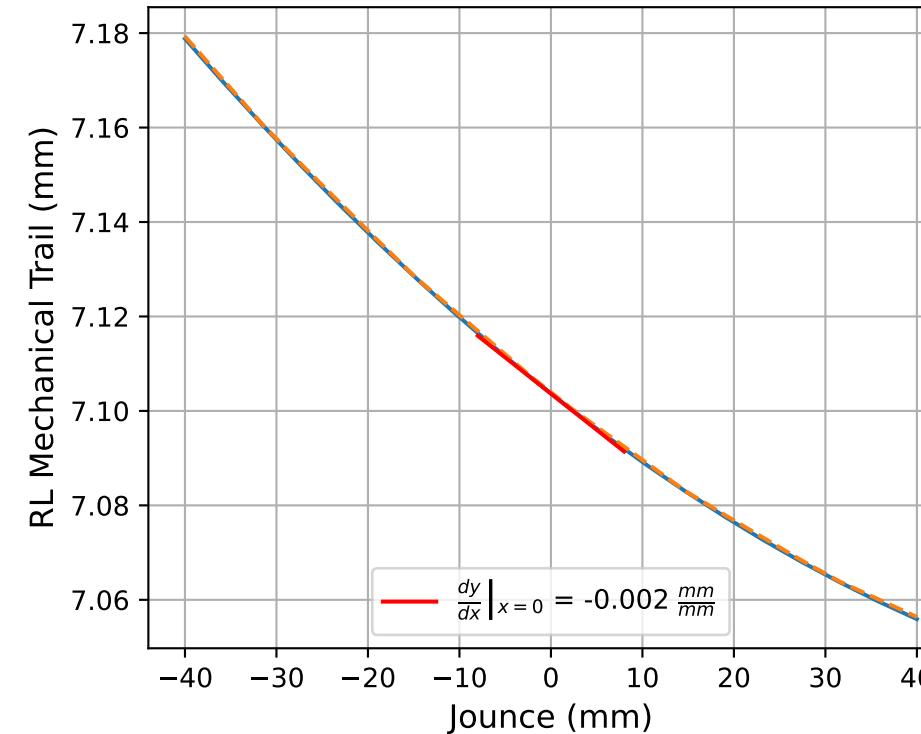
FR Bump Mechanical Trail

**Linear Fit**

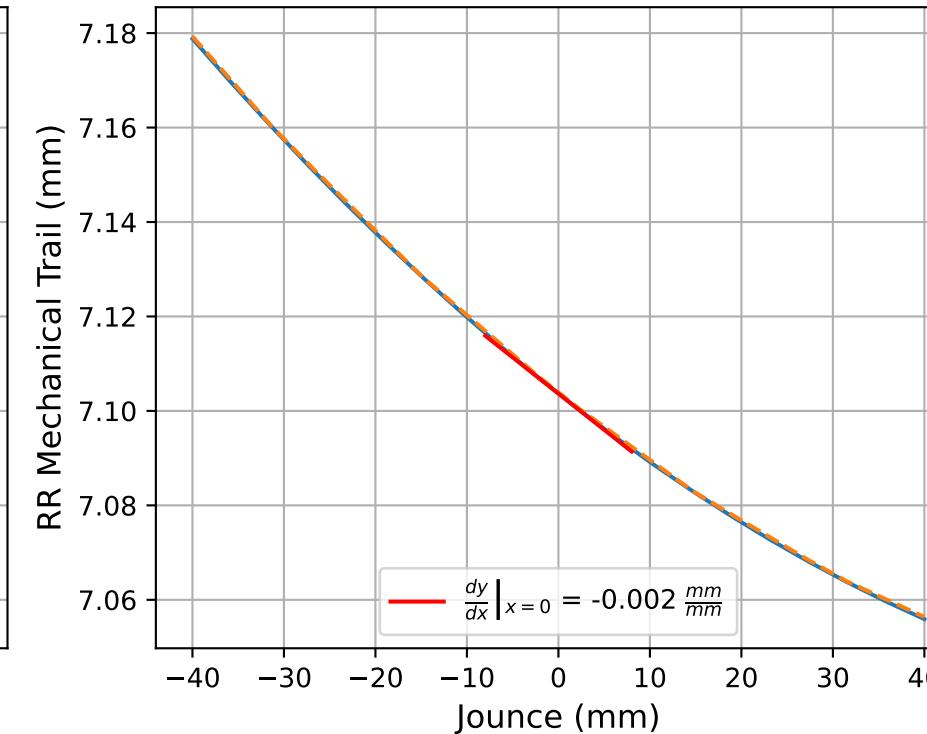
$$f(x) = a_1x + a_0$$

FL	$f(x) = -0.001x + 4.897$
FR	$f(x) = -0.001x + 4.897$
RL	$f(x) = -0.002x + 7.104$
RR	$f(x) = -0.002x + 7.104$

RL Bump Mechanical Trail



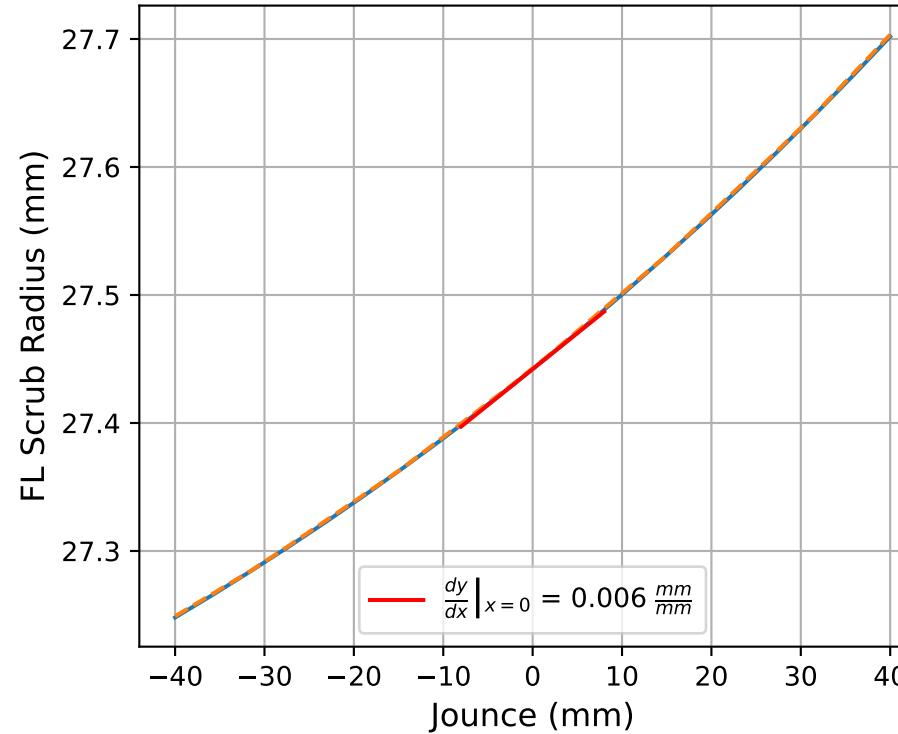
RR Bump Mechanical Trail

**Cubic Fit**

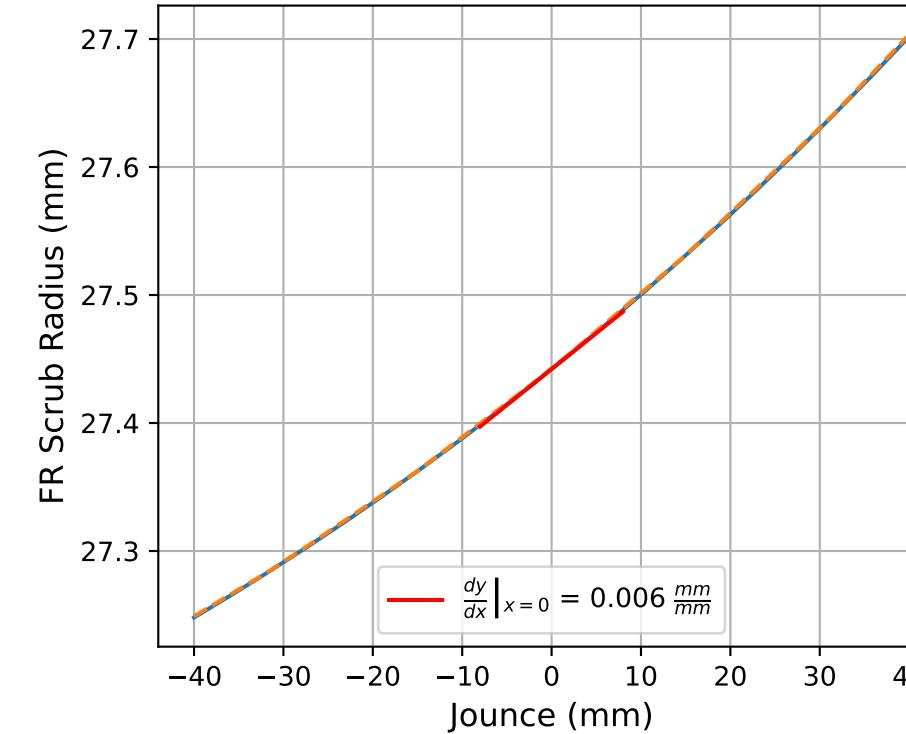
$$f(x) = a_3x^3 + a_2x^2 + a_1x + a_0$$

FL	$f(x) = 0.0x^3 + -0.0x^2 + -0.001x + 4.897$
FR	$f(x) = 0.0x^3 + -0.0x^2 + -0.001x + 4.897$
RL	$f(x) = -0.0x^3 + 0.0x^2 + -0.002x + 7.104$
RR	$f(x) = -0.0x^3 + 0.0x^2 + -0.002x + 7.104$

FL Bump Scrub Radius



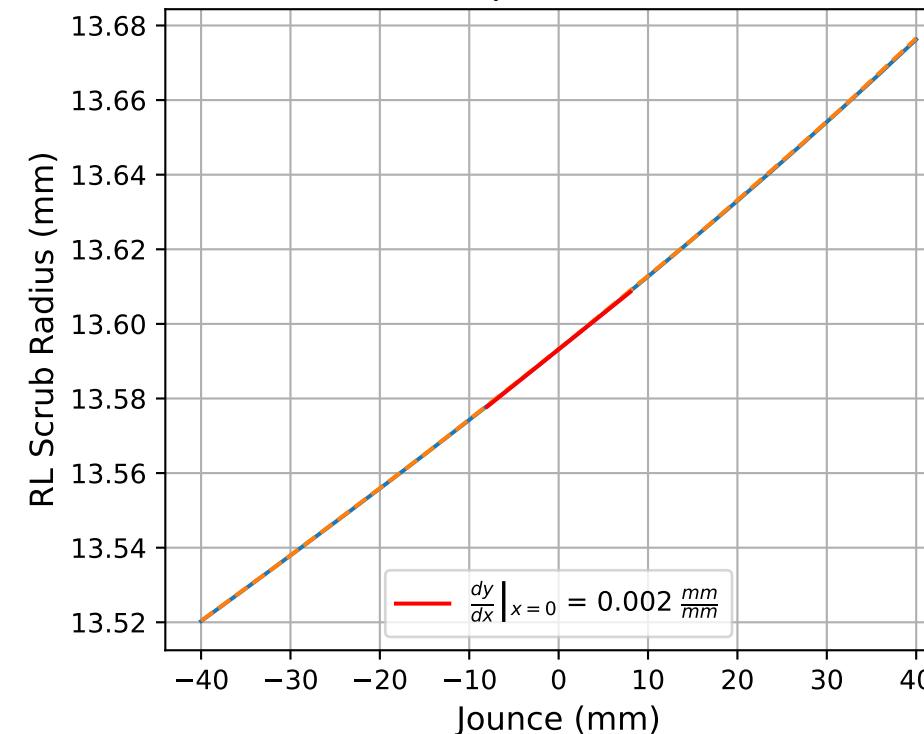
FR Bump Scrub Radius

**Linear Fit**

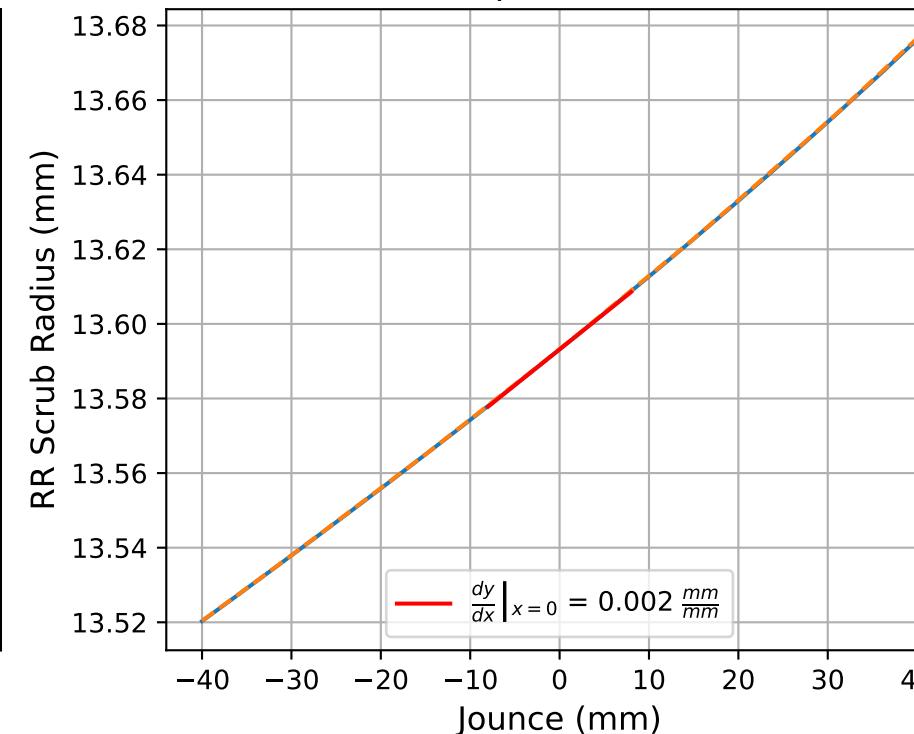
$$f(x) = a_1x + a_0$$

FL	$f(x) = 0.006x + 27.442$
FR	$f(x) = 0.006x + 27.442$
RL	$f(x) = 0.002x + 13.593$
RR	$f(x) = 0.002x + 13.593$

RL Bump Scrub Radius



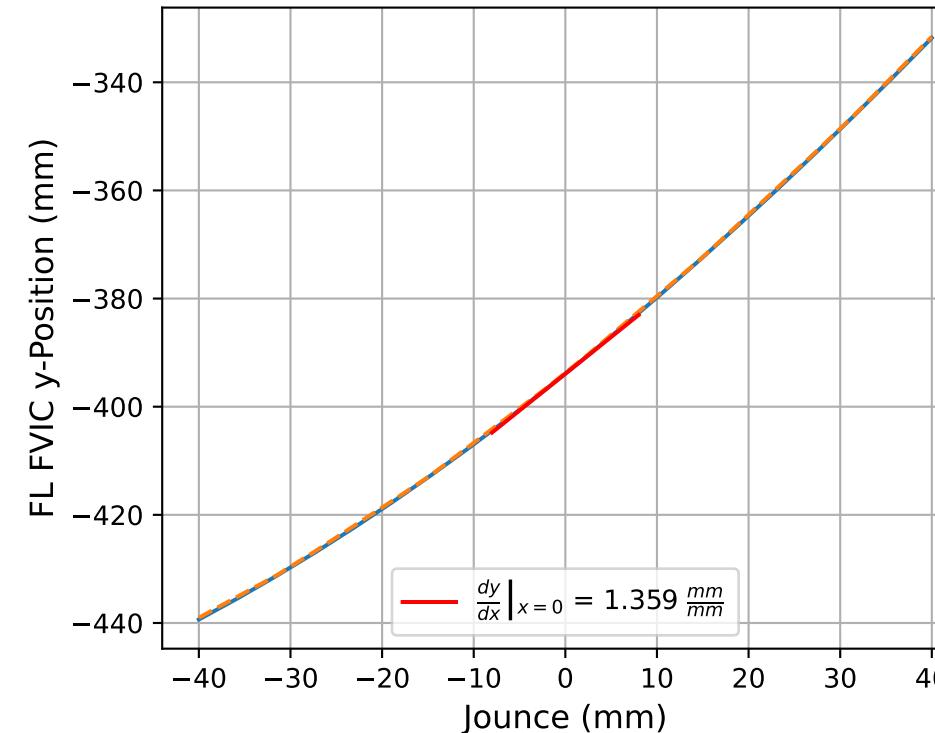
RR Bump Scrub Radius

**Cubic Fit**

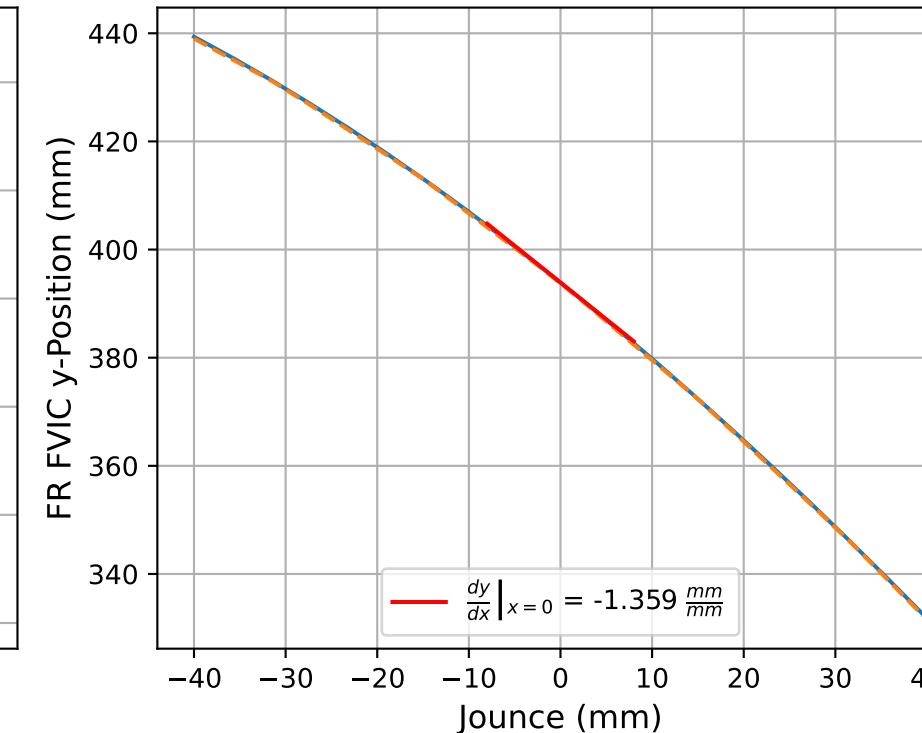
$$f(x) = a_3x^3 + a_2x^2 + a_1x + a_0$$

FL	$f(x) = 0.0x^3 + 0.0x^2 + 0.006x + 27.442$
FR	$f(x) = 0.0x^3 + 0.0x^2 + 0.006x + 27.442$
RL	$f(x) = 0.0x^3 + 0.0x^2 + 0.002x + 13.593$
RR	$f(x) = 0.0x^3 + 0.0x^2 + 0.002x + 13.593$

FL Bump FVIC y-Migration



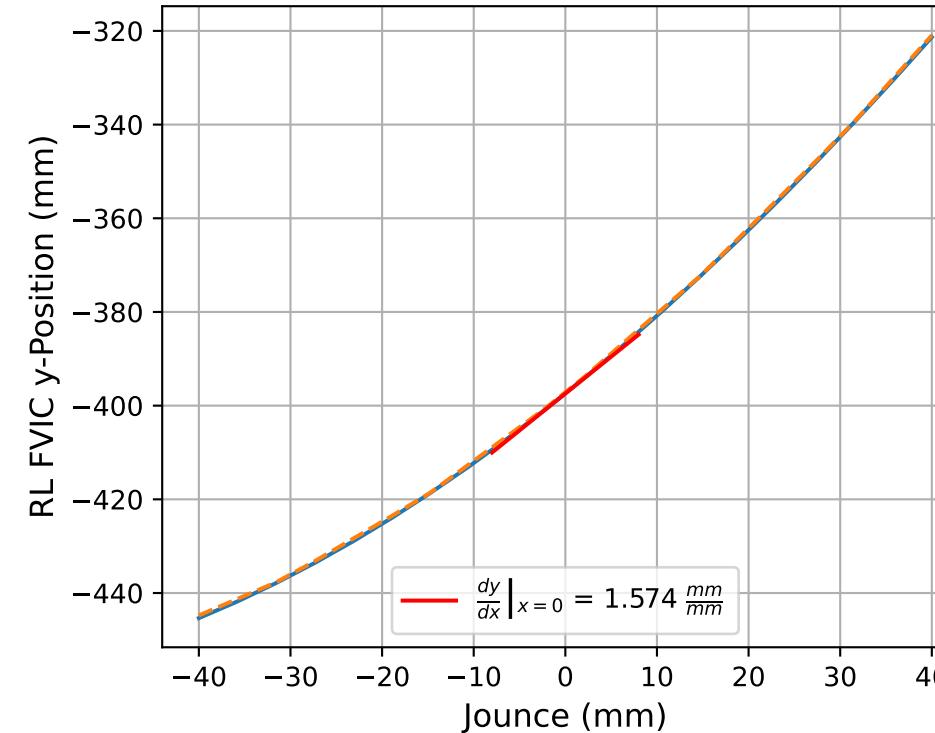
FR Bump FVIC y-Migration

**Linear Fit**

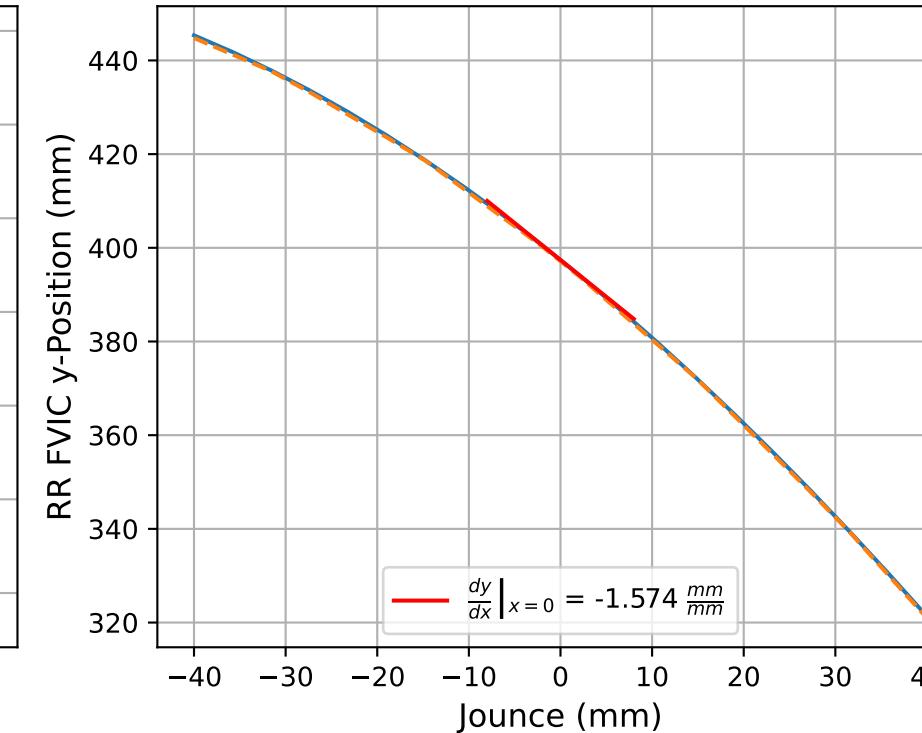
$$f(x) = a_1x + a_0$$

FL	$f(x) = 1.359x + -393.907$
FR	$f(x) = -1.359x + 393.907$
RL	$f(x) = 1.574x + -397.417$
RR	$f(x) = -1.574x + 397.417$

RL Bump FVIC y-Migration



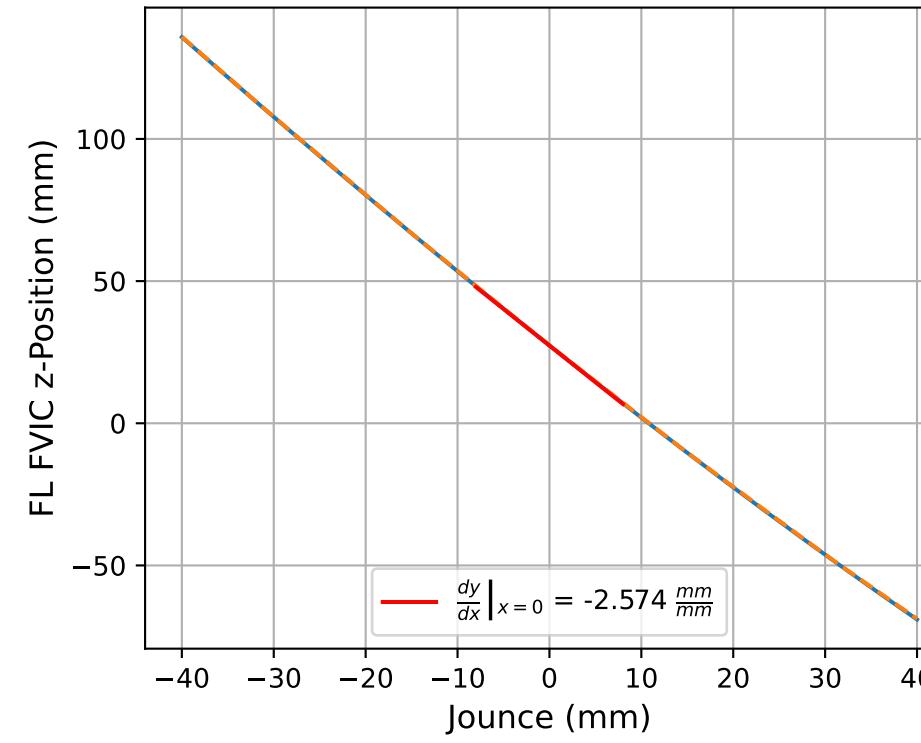
RR Bump FVIC y-Migration

**Cubic Fit**

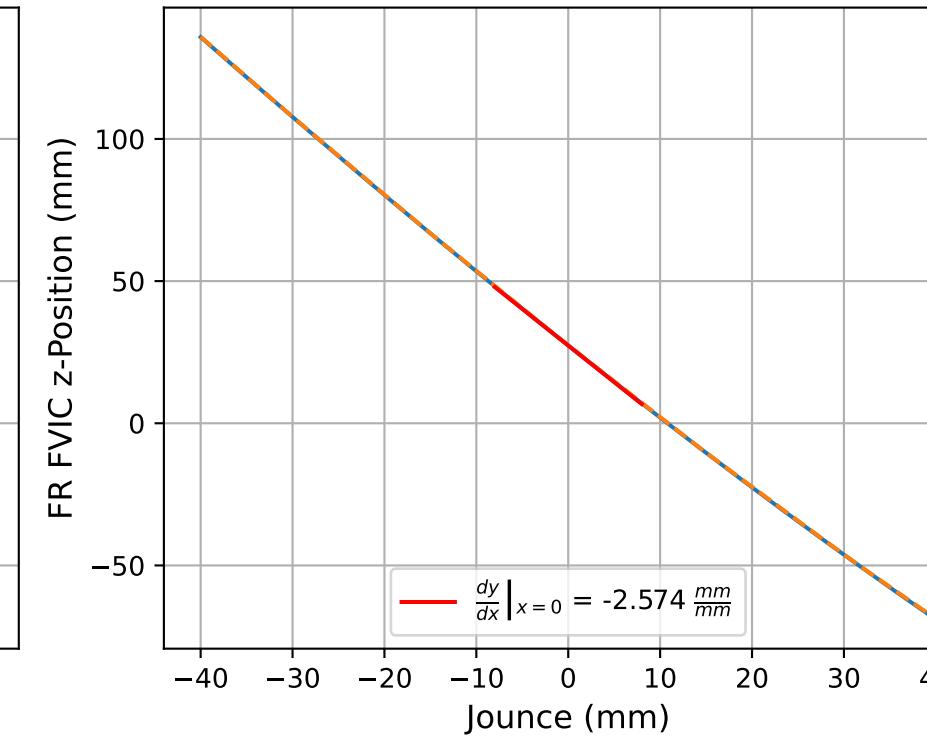
$$f(x) = a_3x^3 + a_2x^2 + a_1x + a_0$$

FL	$f(x) = -0.0x^3 + 0.005x^2 + 1.359x + -393.906$
FR	$f(x) = 0.0x^3 + -0.005x^2 + -1.359x + 393.906$
RL	$f(x) = -0.0x^3 + 0.009x^2 + 1.574x + -397.413$
RR	$f(x) = 0.0x^3 + -0.009x^2 + -1.574x + 397.413$

FL Bump FVIC z-Migration



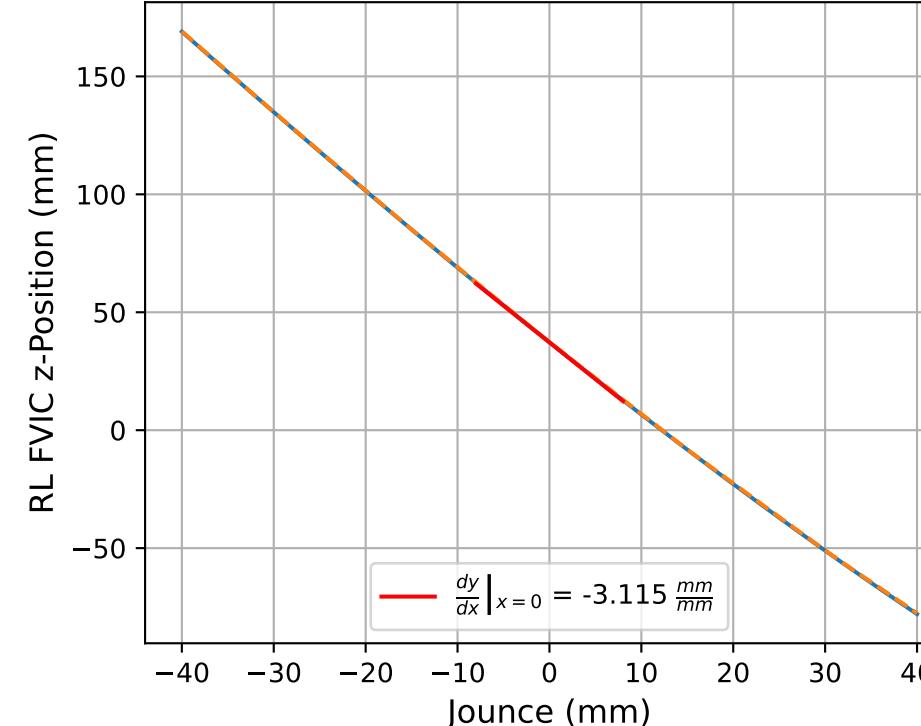
FR Bump FVIC z-Migration

**Linear Fit**

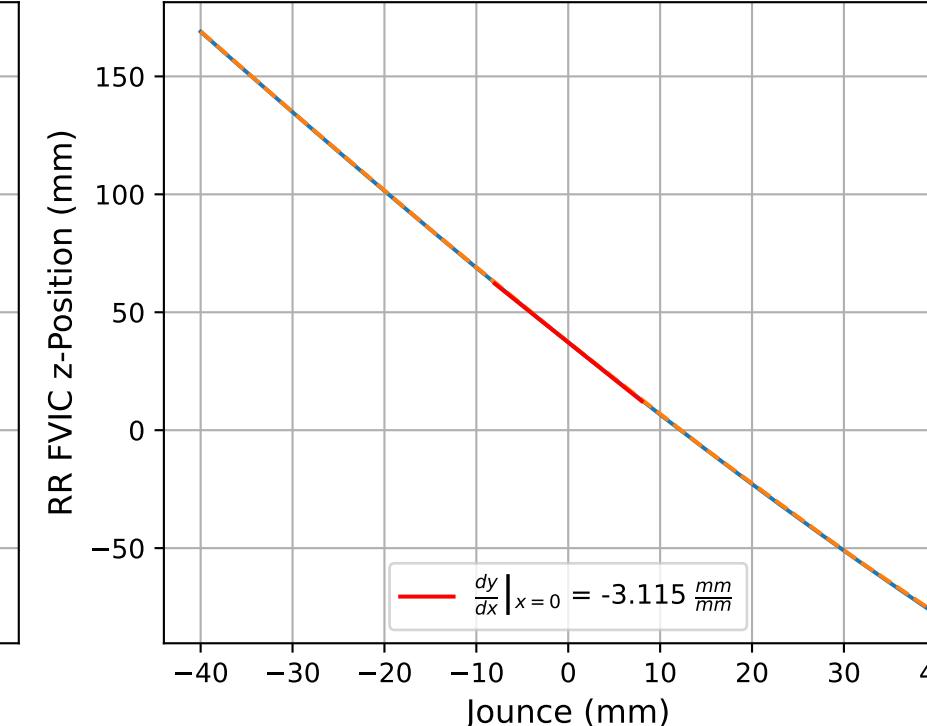
$$f(x) = a_1x + a_0$$

FL	$f(x) = -2.574x + 27.34$
FR	$f(x) = -2.574x + 27.34$
RL	$f(x) = -3.115x + 37.239$
RR	$f(x) = -3.115x + 37.239$

RL Bump FVIC z-Migration

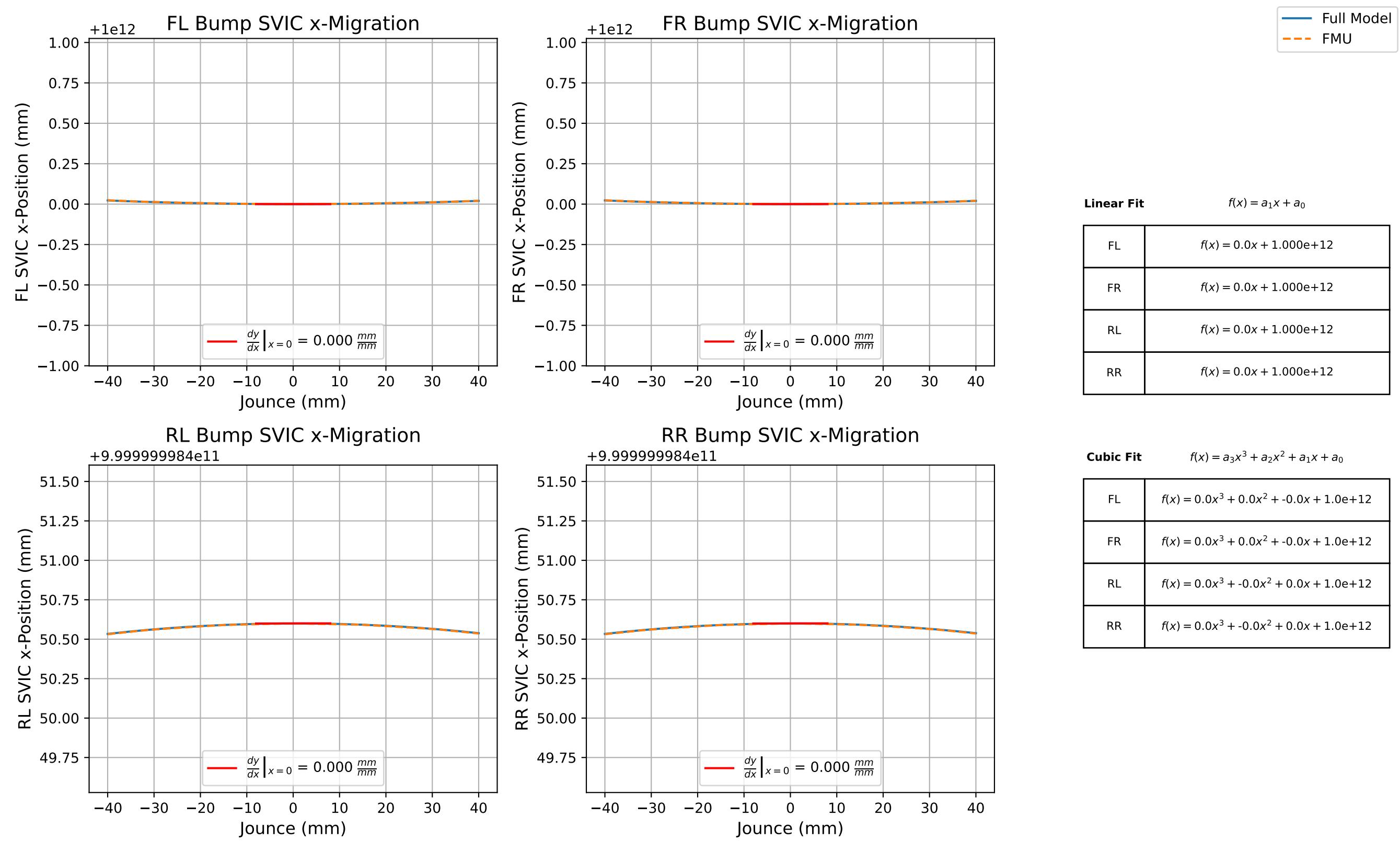


RR Bump FVIC z-Migration

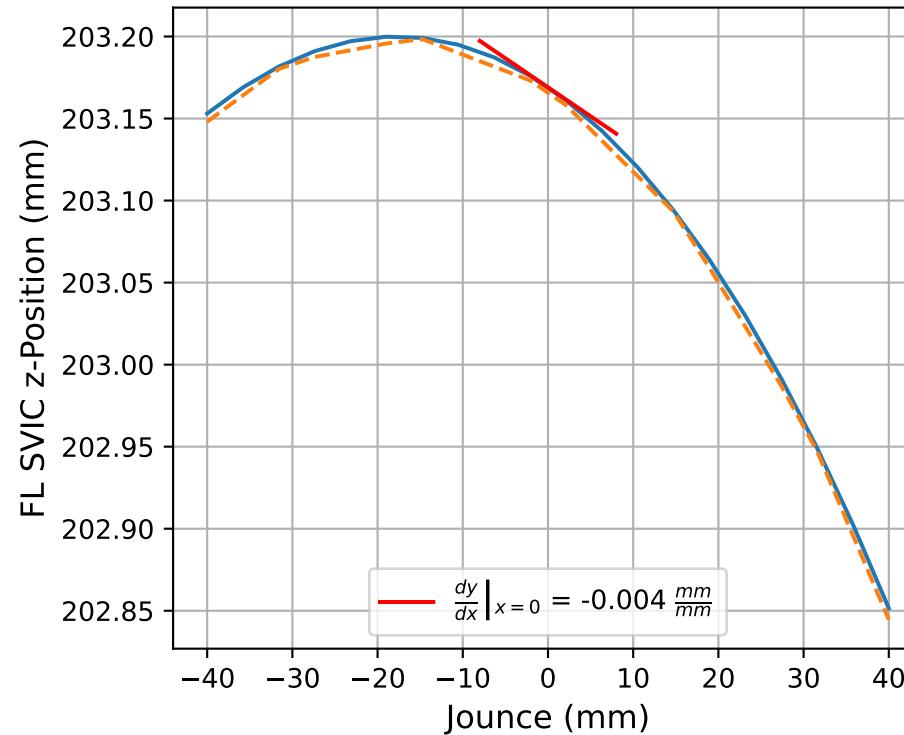
**Cubic Fit**

$$f(x) = a_3x^3 + a_2x^2 + a_1x + a_0$$

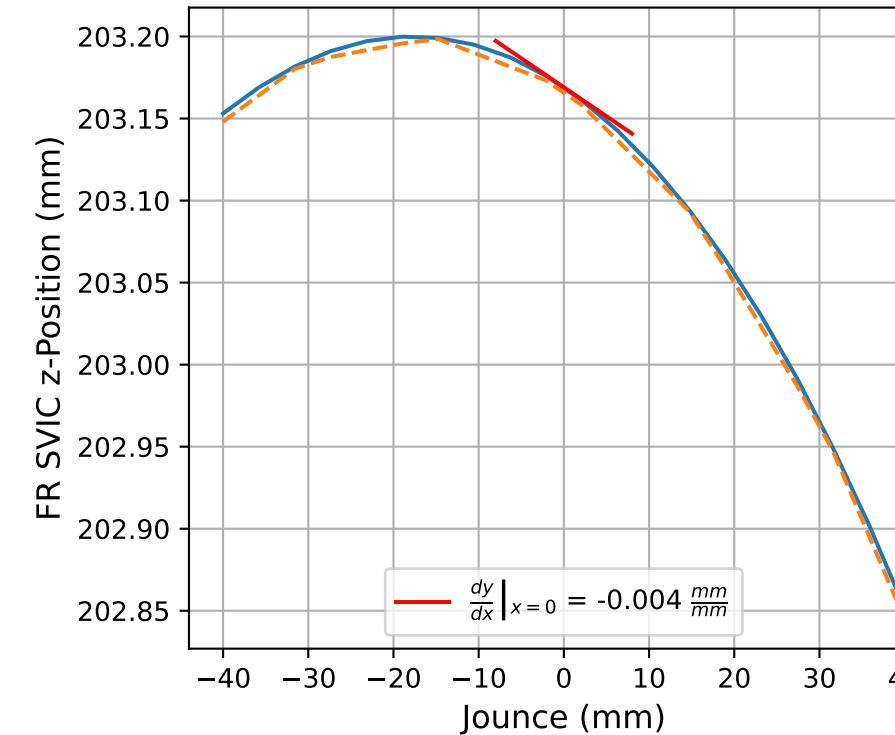
FL	$f(x) = 0.0x^3 + 0.004x^2 + -2.574x + 27.343$
FR	$f(x) = 0.0x^3 + 0.004x^2 + -2.574x + 27.343$
RL	$f(x) = 0.0x^3 + 0.005x^2 + -3.115x + 37.245$
RR	$f(x) = 0.0x^3 + 0.005x^2 + -3.115x + 37.245$



FL Bump SVIC z-Migration



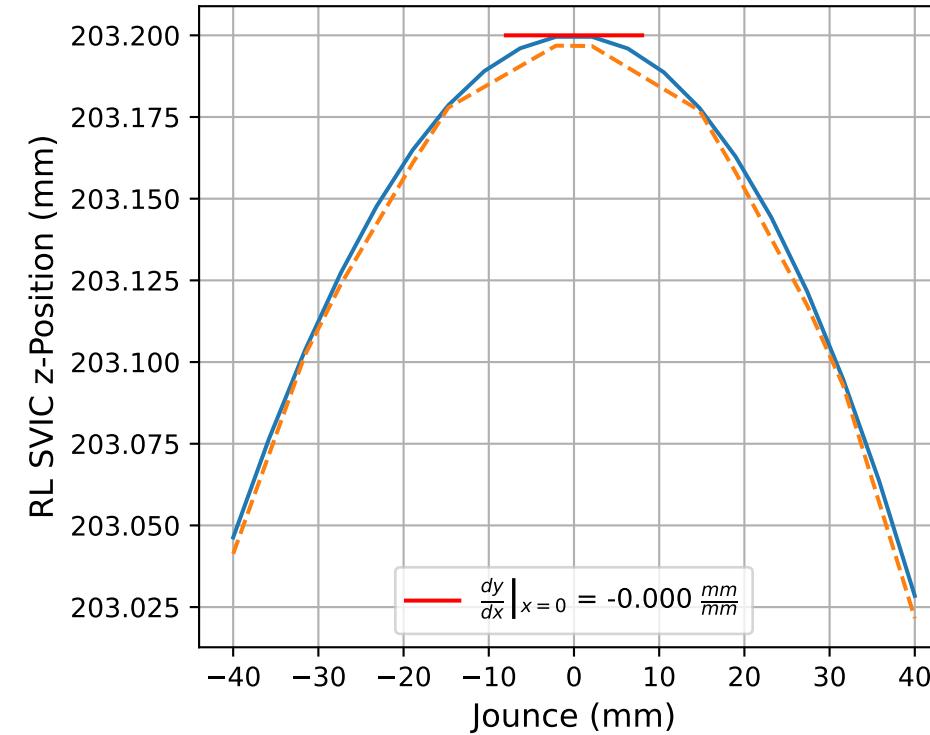
FR Bump SVIC z-Migration

**Linear Fit**

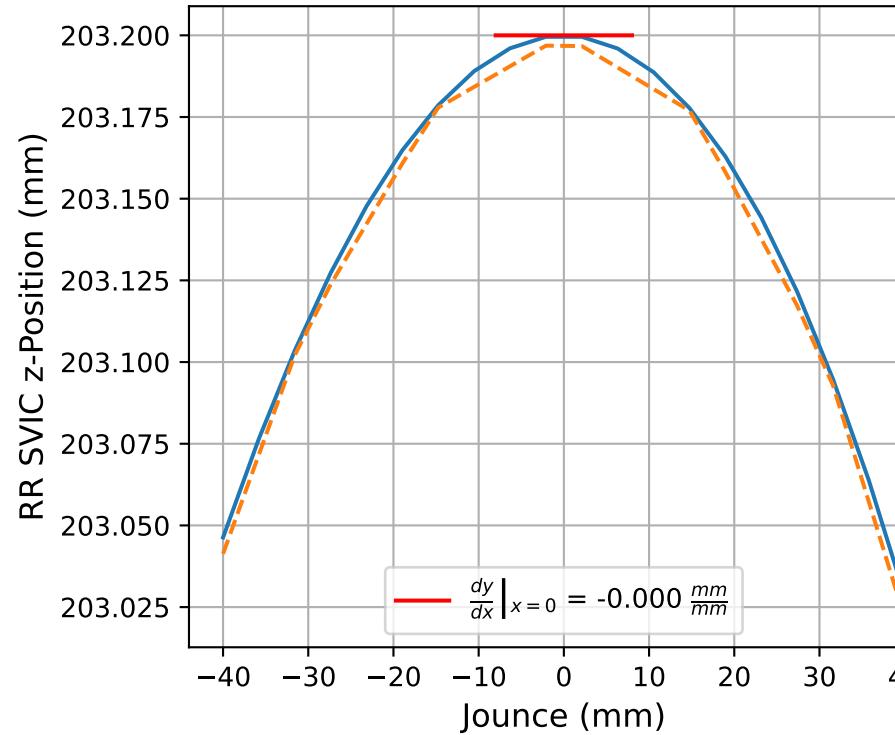
$$f(x) = a_1x + a_0$$

FL	$f(x) = -0.004x + 203.169$
FR	$f(x) = -0.004x + 203.169$
RL	$f(x) = -0.0x + 203.2$
RR	$f(x) = -0.0x + 203.2$

RL Bump SVIC z-Migration

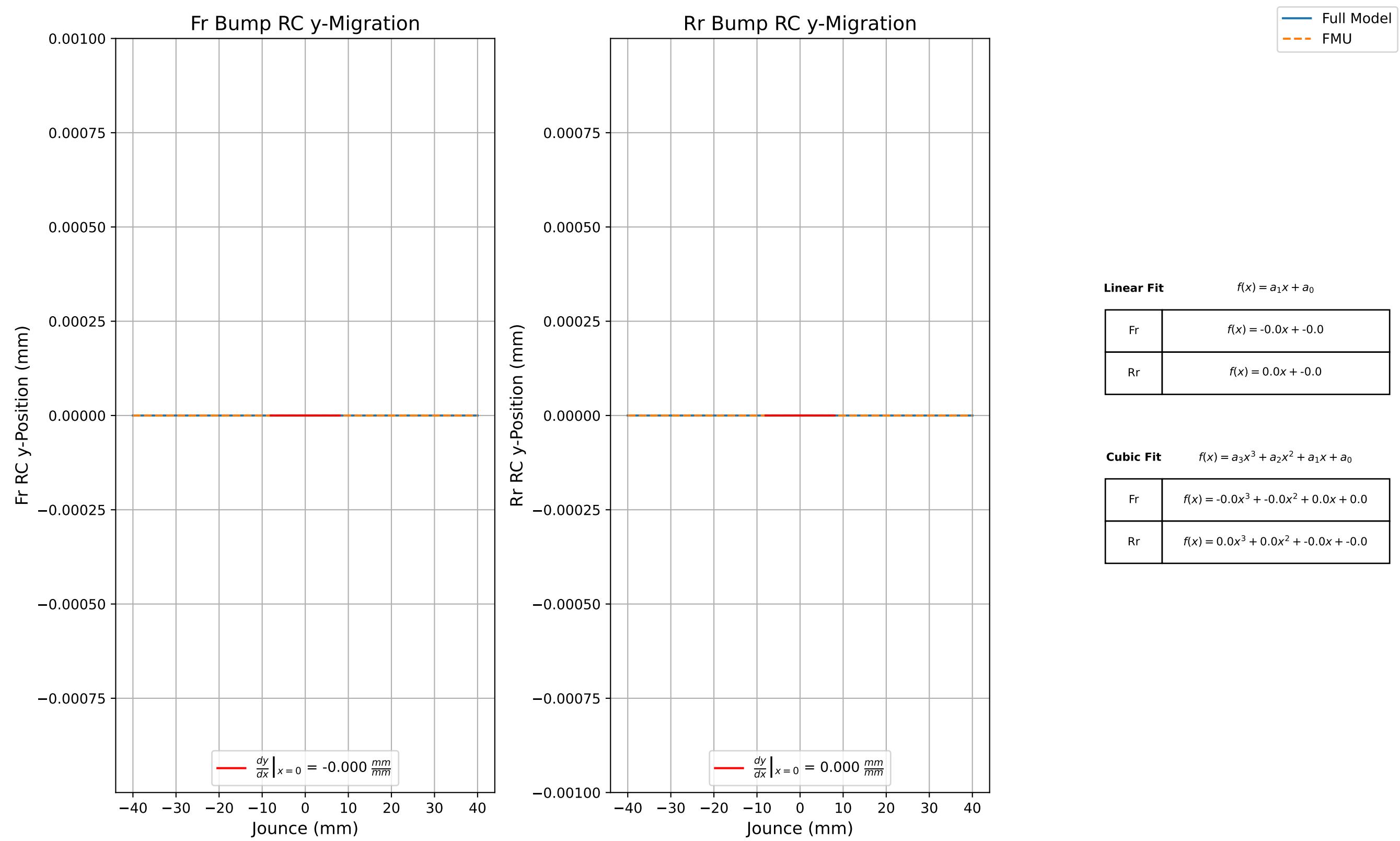


RR Bump SVIC z-Migration

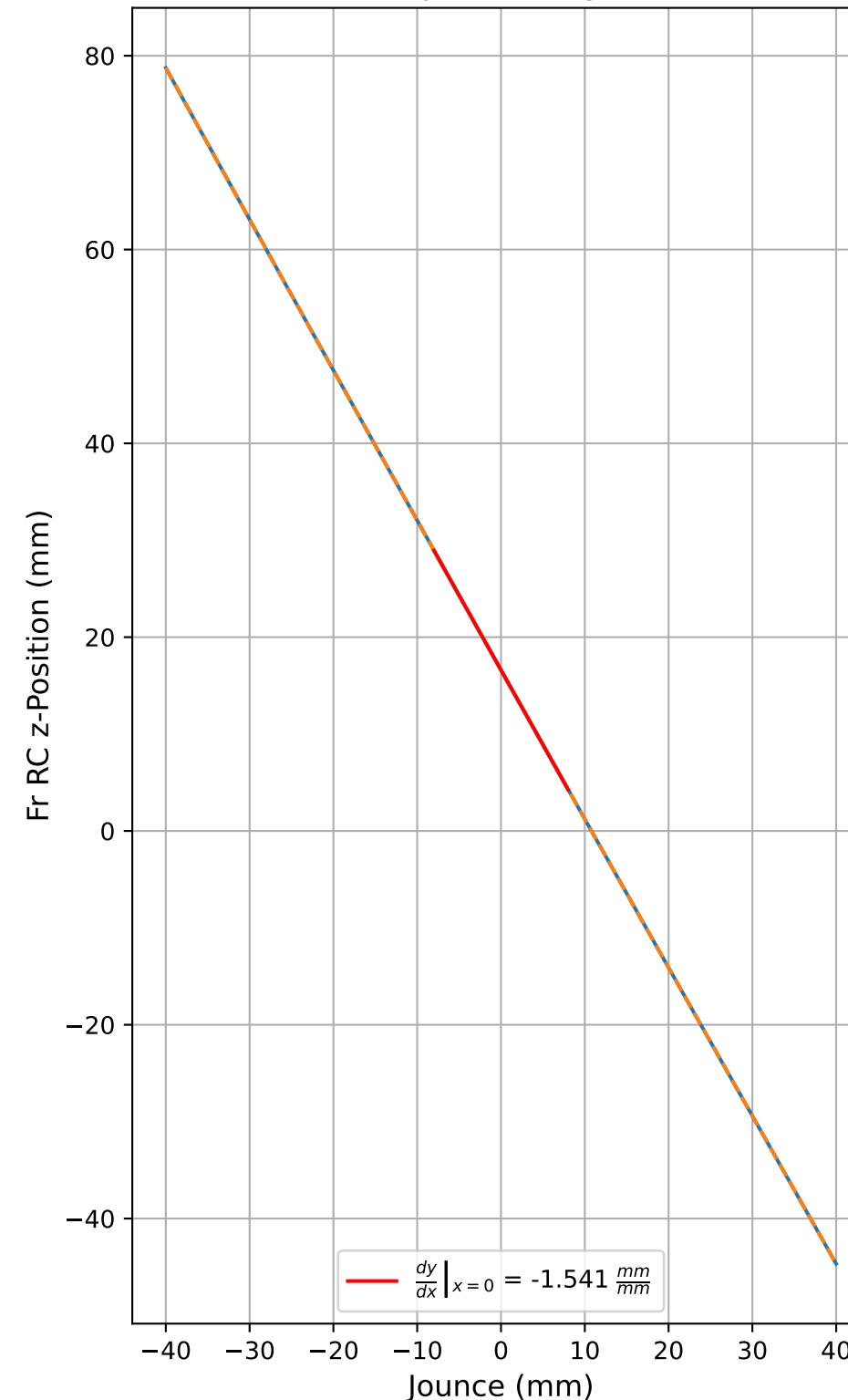
**Cubic Fit**

$$f(x) = a_3x^3 + a_2x^2 + a_1x + a_0$$

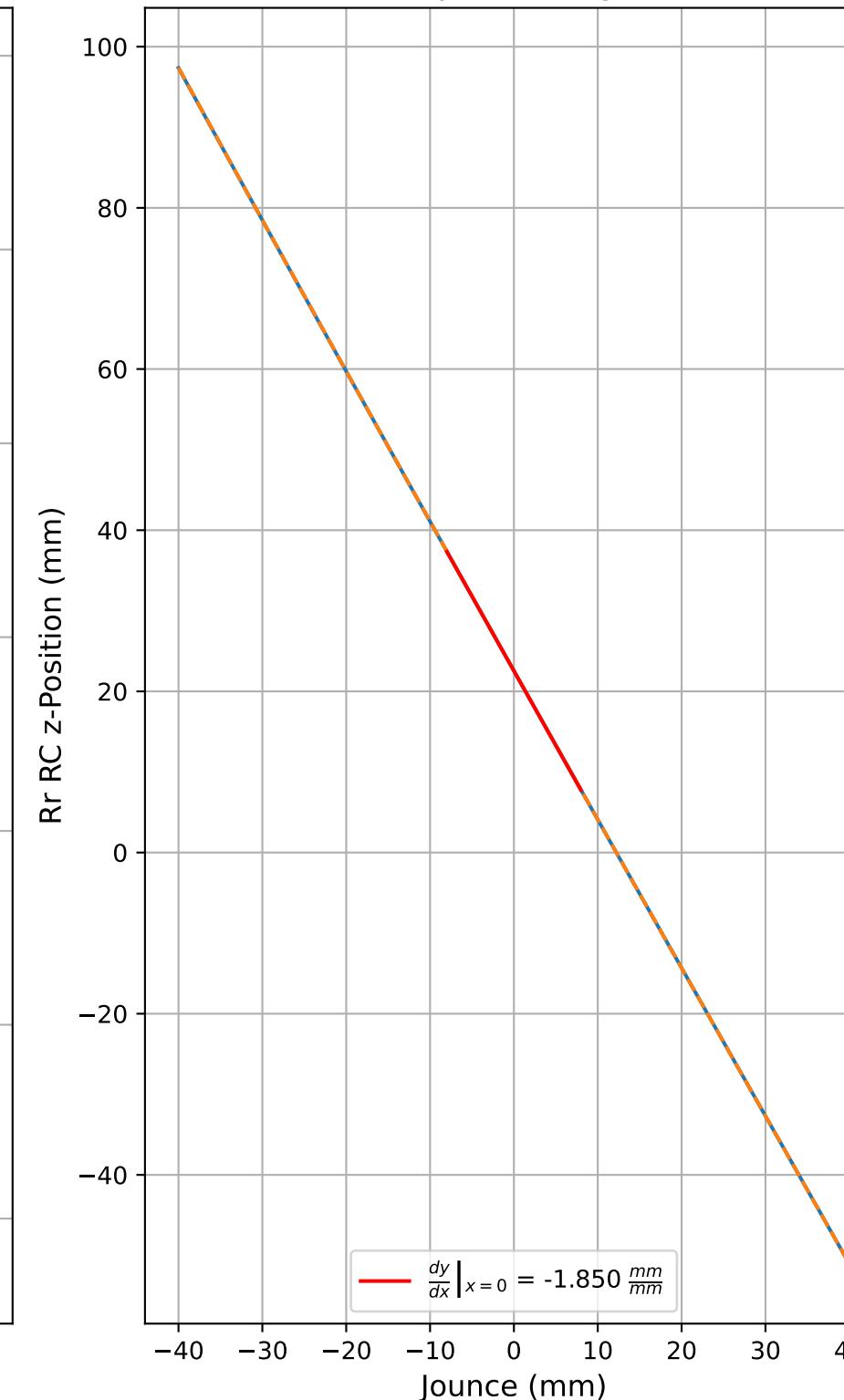
FL	$f(x) = -0.0x^3 + -0.0x^2 + -0.004x + 203.169$
FR	$f(x) = -0.0x^3 + -0.0x^2 + -0.004x + 203.169$
RL	$f(x) = -0.0x^3 + -0.0x^2 + 0.0x + 203.2$
RR	$f(x) = -0.0x^3 + -0.0x^2 + 0.0x + 203.2$



Fr Bump RC z-Migration



Rr Bump RC z-Migration

**Linear Fit**

$$f(x) = a_1x + a_0$$

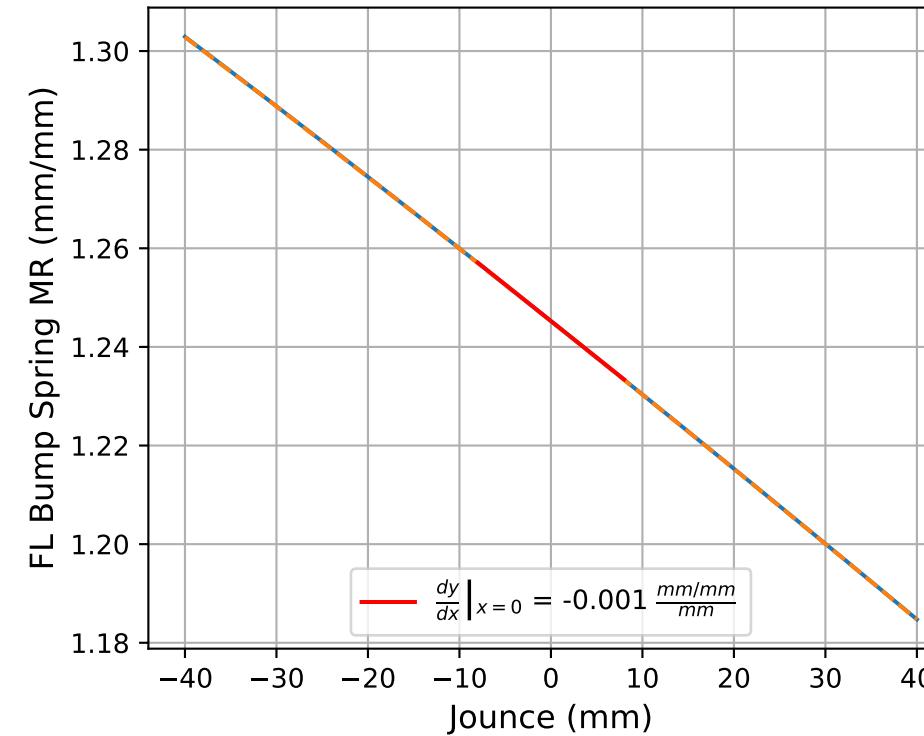
Fr	$f(x) = -1.541x + 16.608$
Rr	$f(x) = -1.85x + 22.543$

Cubic Fit

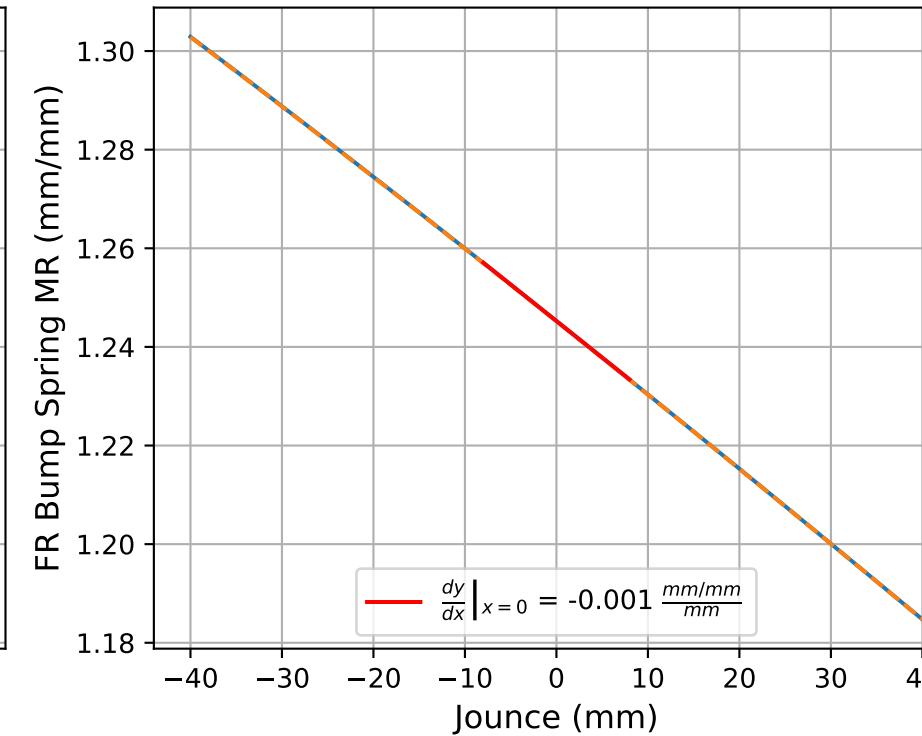
$$f(x) = a_3x^3 + a_2x^2 + a_1x + a_0$$

Fr	$f(x) = -0.0x^3 + 0.0x^2 + -1.541x + 16.607$
Rr	$f(x) = -0.0x^3 + 0.0x^2 + -1.85x + 22.541$

FL Bump Spring MRs



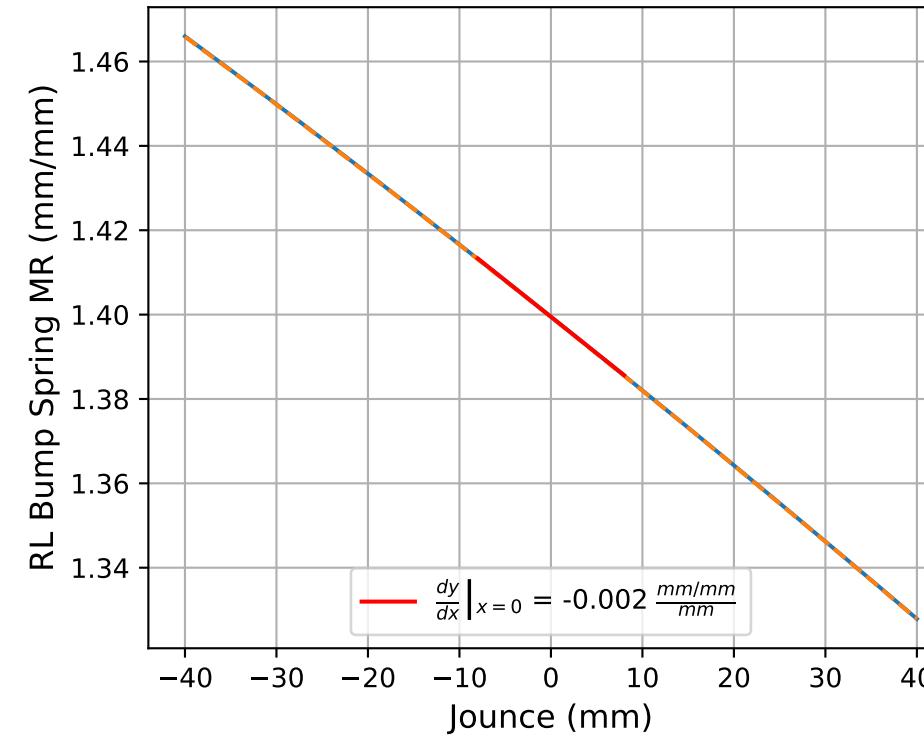
FR Bump Spring MRs

**Linear Fit**

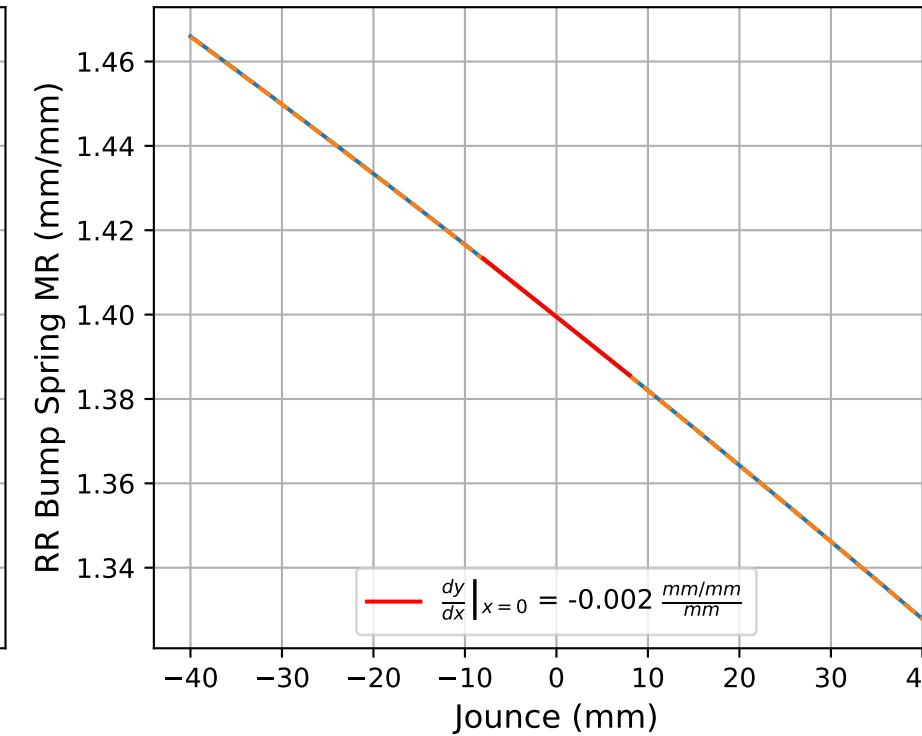
$$f(x) = a_1 x + a_0$$

FL	$f(x) = -0.001x + 1.245$
FR	$f(x) = -0.001x + 1.245$
RL	$f(x) = -0.002x + 1.399$
RR	$f(x) = -0.002x + 1.399$

RL Bump Spring MRs



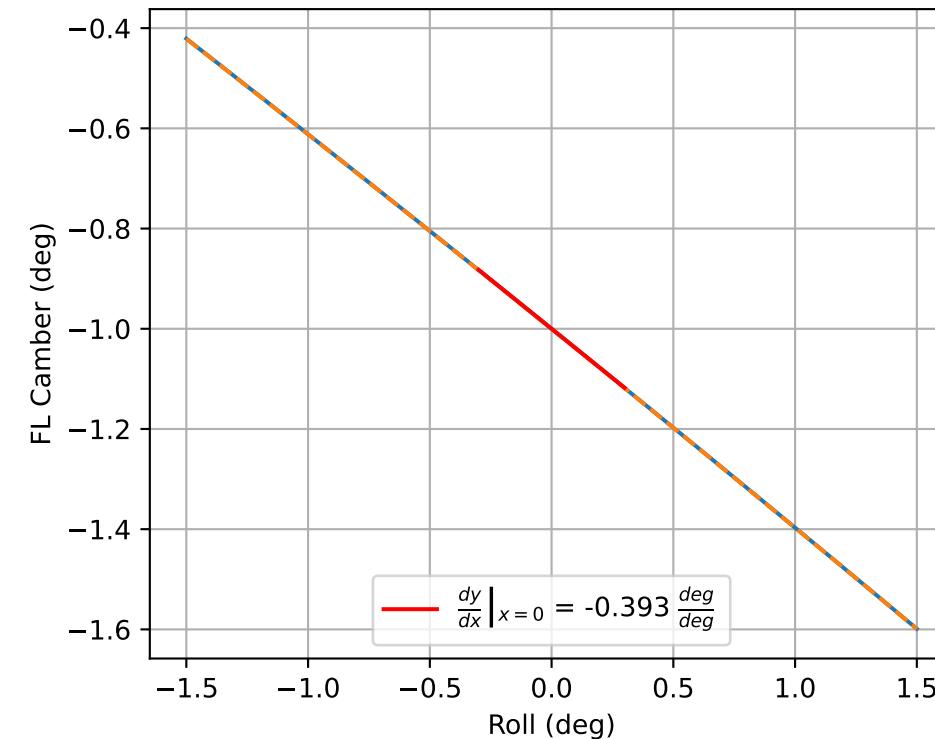
RR Bump Spring MRs

**Cubic Fit**

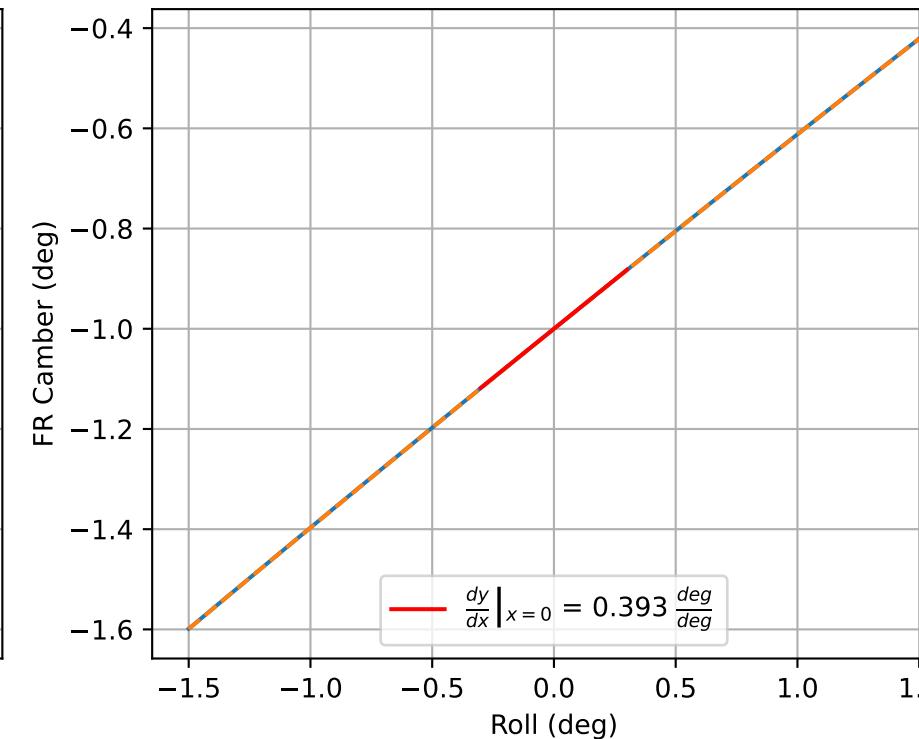
$$f(x) = a_3 x^3 + a_2 x^2 + a_1 x + a_0$$

FL	$f(x) = 0.0x^3 + -0.0x^2 + -0.001x + 1.245$
FR	$f(x) = 0.0x^3 + -0.0x^2 + -0.001x + 1.245$
RL	$f(x) = 0.0x^3 + -0.0x^2 + -0.002x + 1.399$
RR	$f(x) = 0.0x^3 + -0.0x^2 + -0.002x + 1.399$

FL Roll Camber



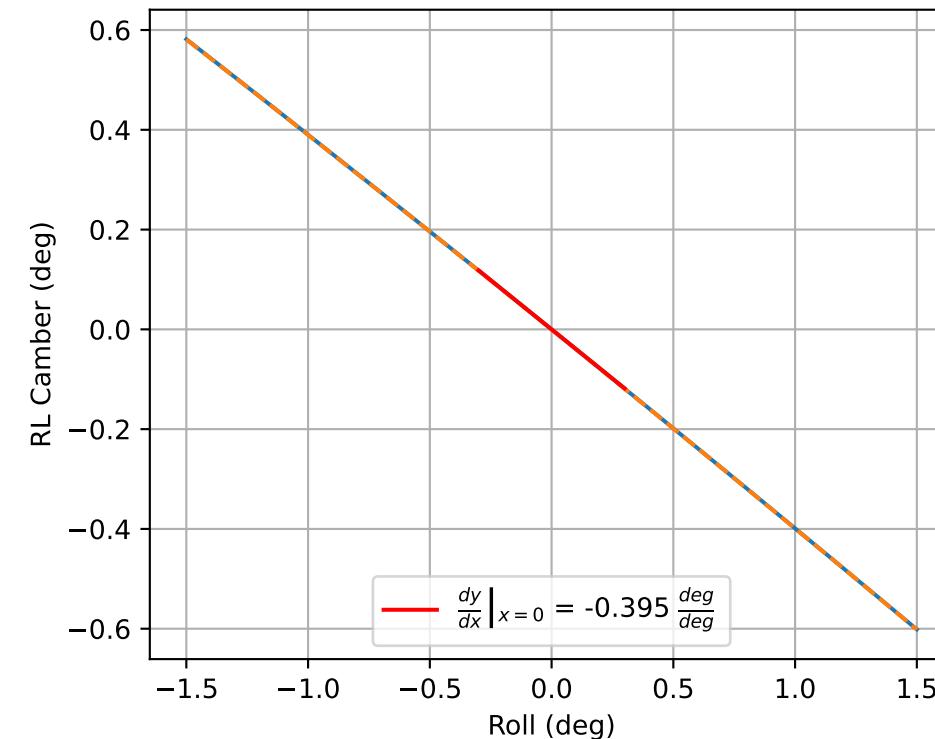
FR Roll Camber

**Linear Fit**

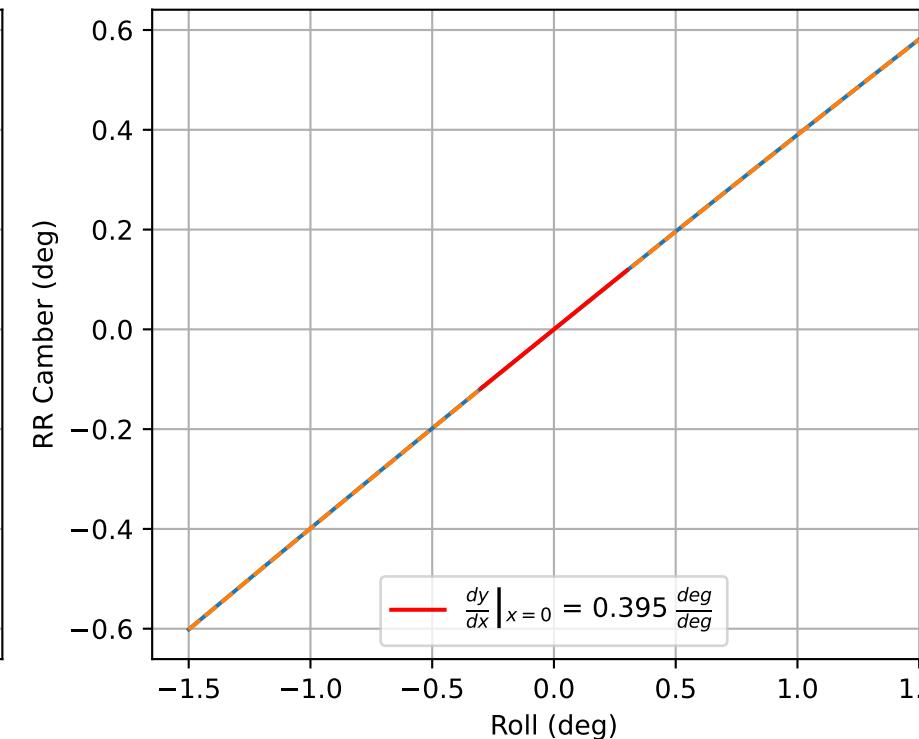
$$f(x) = a_1x + a_0$$

FL	$f(x) = -0.393x + -1.0$
FR	$f(x) = 0.393x + -1.0$
RL	$f(x) = -0.395x + 0.0$
RR	$f(x) = 0.395x + 0.0$

RL Roll Camber



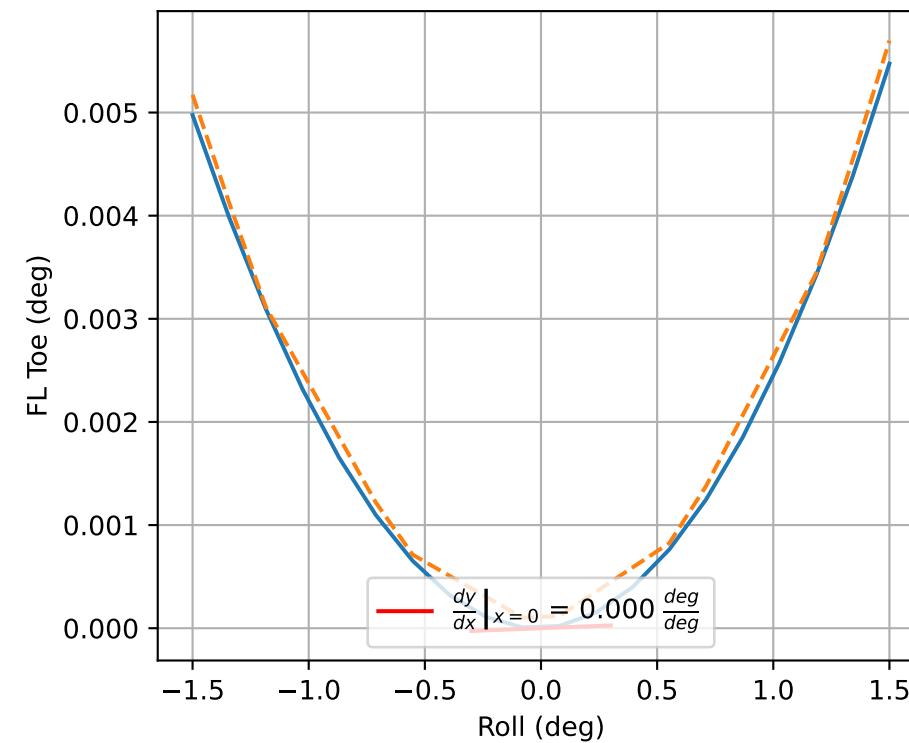
RR Roll Camber

**Cubic Fit**

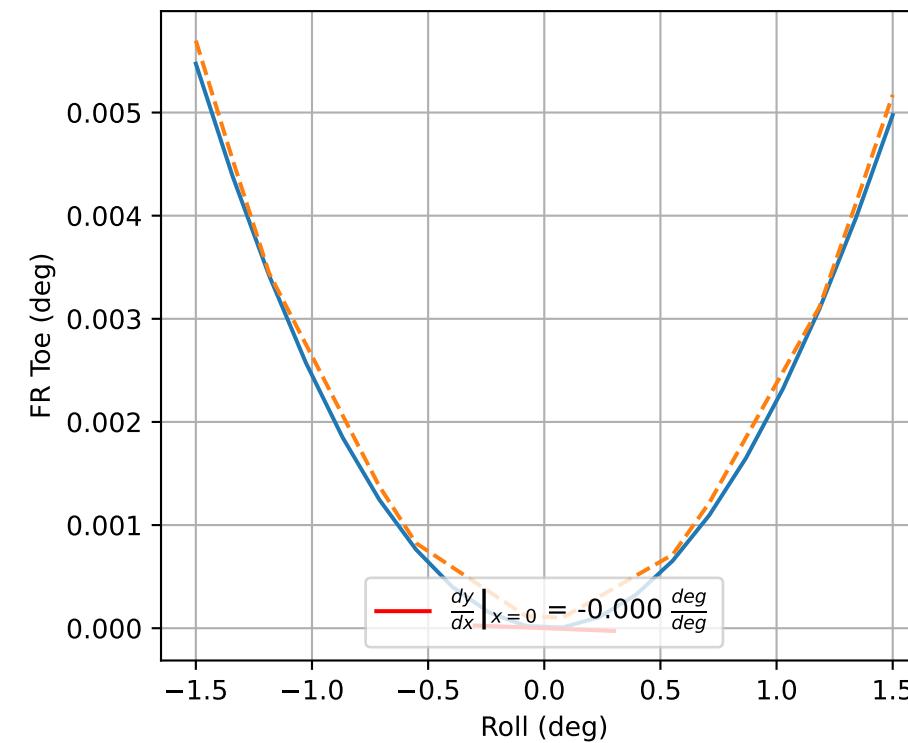
$$f(x) = a_3x^3 + a_2x^2 + a_1x + a_0$$

FL	$f(x) = -0.0x^3 + -0.004x^2 + -0.393x + -1.0$
FR	$f(x) = 0.0x^3 + -0.004x^2 + 0.393x + -1.0$
RL	$f(x) = 0.0x^3 + -0.004x^2 + -0.395x + 0.0$
RR	$f(x) = -0.0x^3 + -0.004x^2 + 0.395x + 0.0$

FL Roll Toe



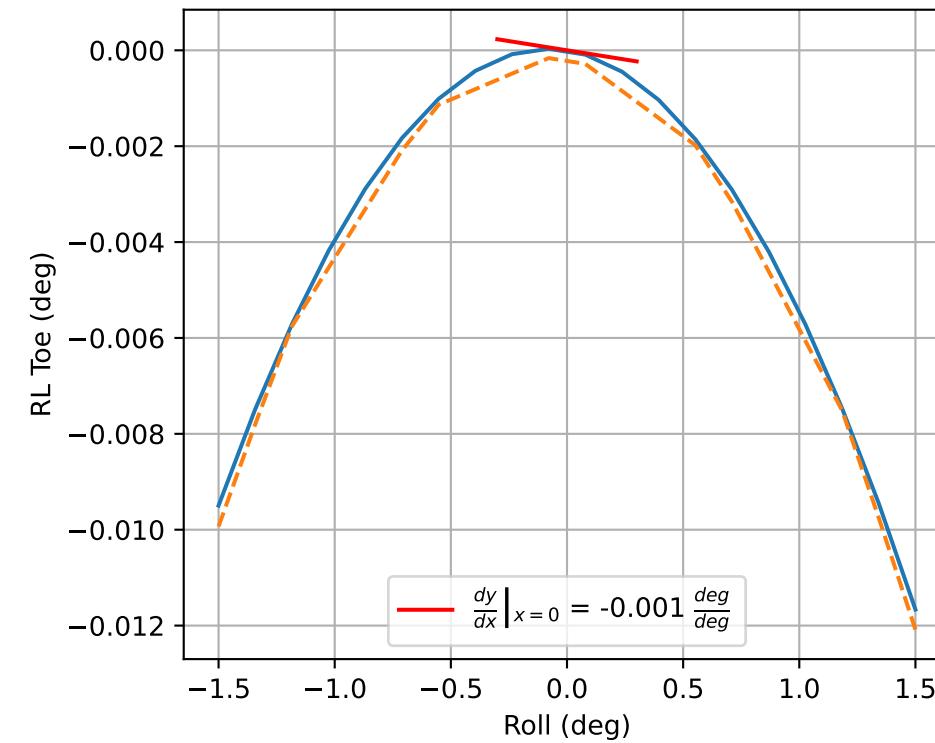
FR Roll Toe

**Linear Fit**

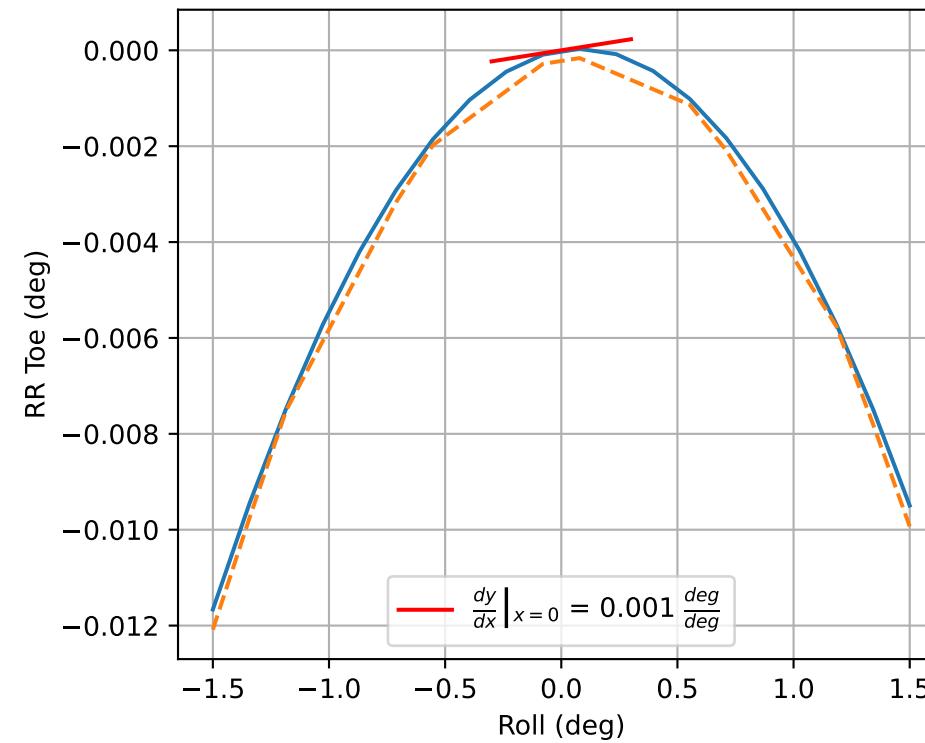
$$f(x) = a_1x + a_0$$

FL	$f(x) = 0.0x + -0.0$
FR	$f(x) = -0.0x + -0.0$
RL	$f(x) = -0.001x + 0.0$
RR	$f(x) = 0.001x + 0.0$

RL Roll Toe



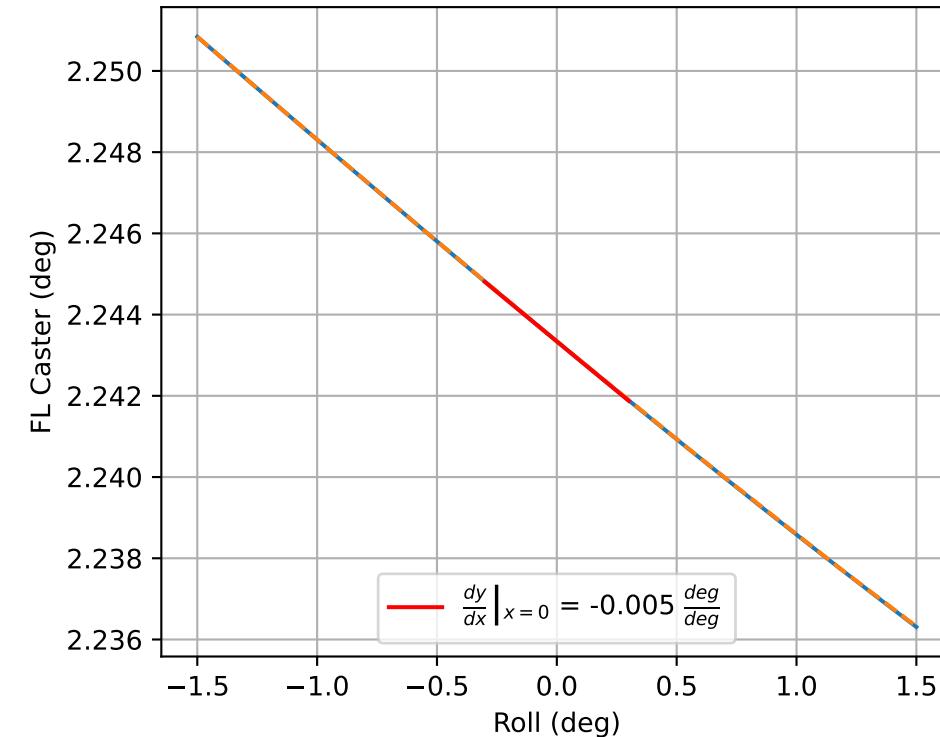
RR Roll Toe

**Cubic Fit**

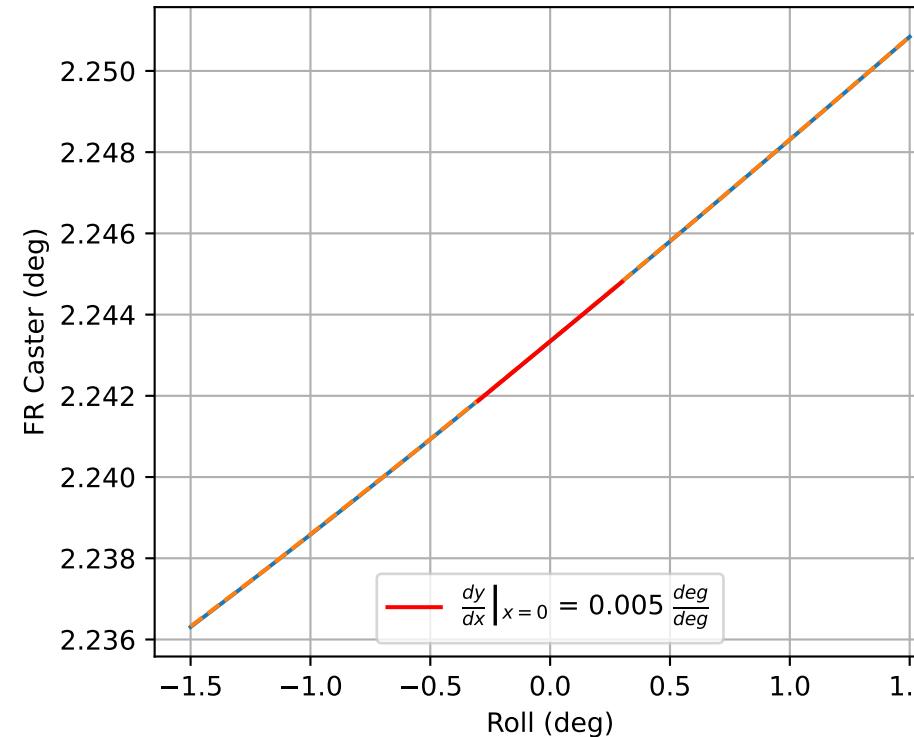
$$f(x) = a_3x^3 + a_2x^2 + a_1x + a_0$$

FL	$f(x) = 0.0x^3 + 0.002x^2 + 0.0x + -0.0$
FR	$f(x) = -0.0x^3 + 0.002x^2 + -0.0x + -0.0$
RL	$f(x) = 0.0x^3 + -0.005x^2 + -0.001x + 0.0$
RR	$f(x) = -0.0x^3 + -0.005x^2 + 0.001x + 0.0$

FL Roll Caster



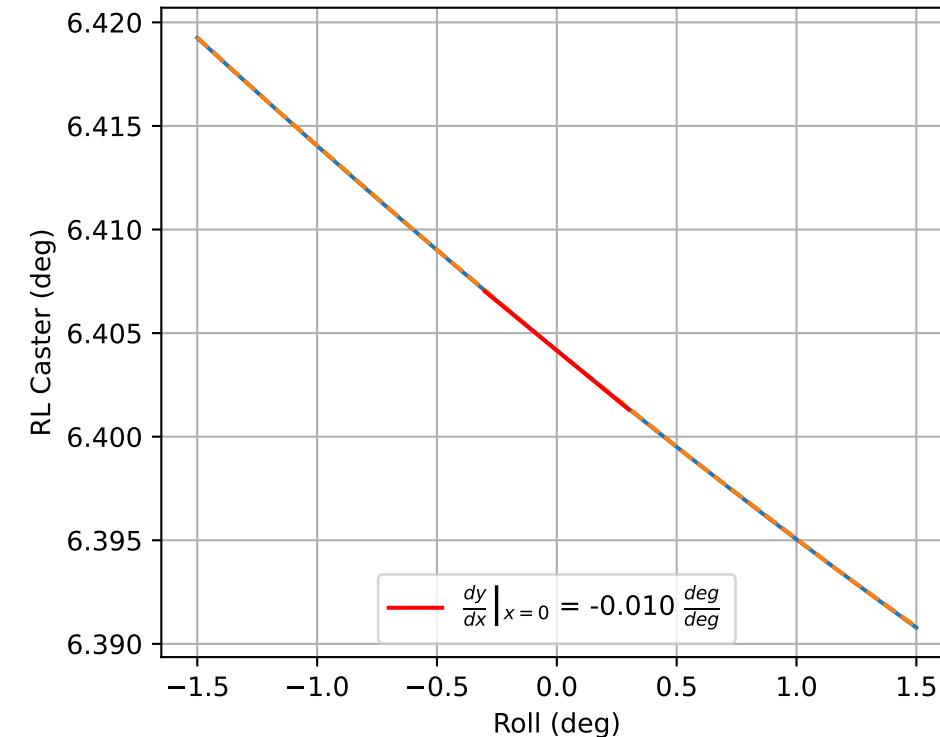
FR Roll Caster

**Linear Fit**

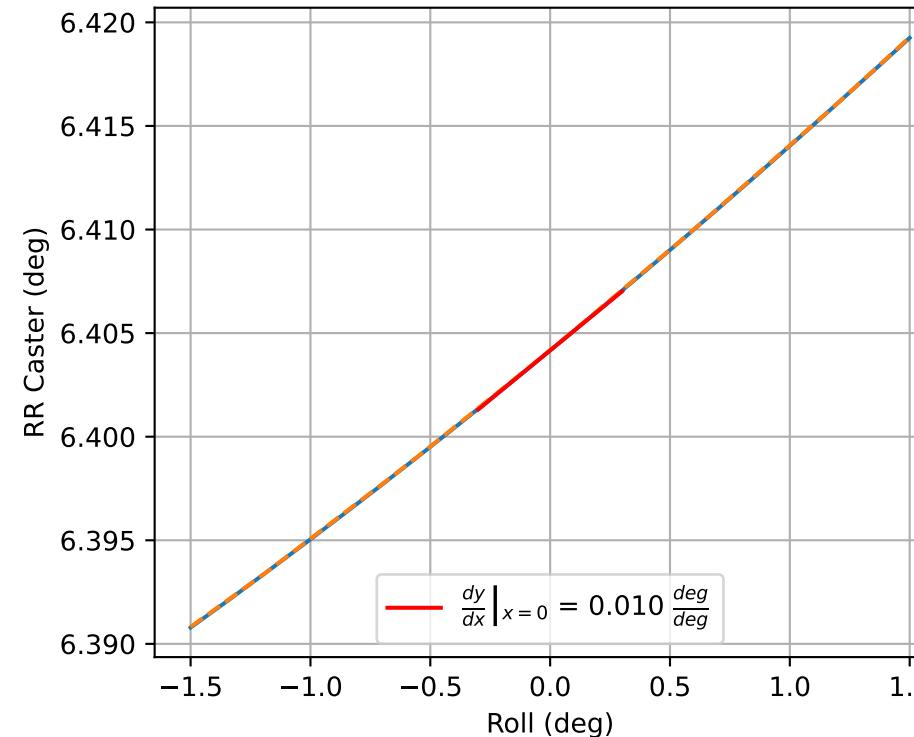
$$f(x) = a_1x + a_0$$

FL	$f(x) = -0.005x + 2.243$
FR	$f(x) = 0.005x + 2.243$
RL	$f(x) = -0.01x + 6.404$
RR	$f(x) = 0.01x + 6.404$

RL Roll Caster



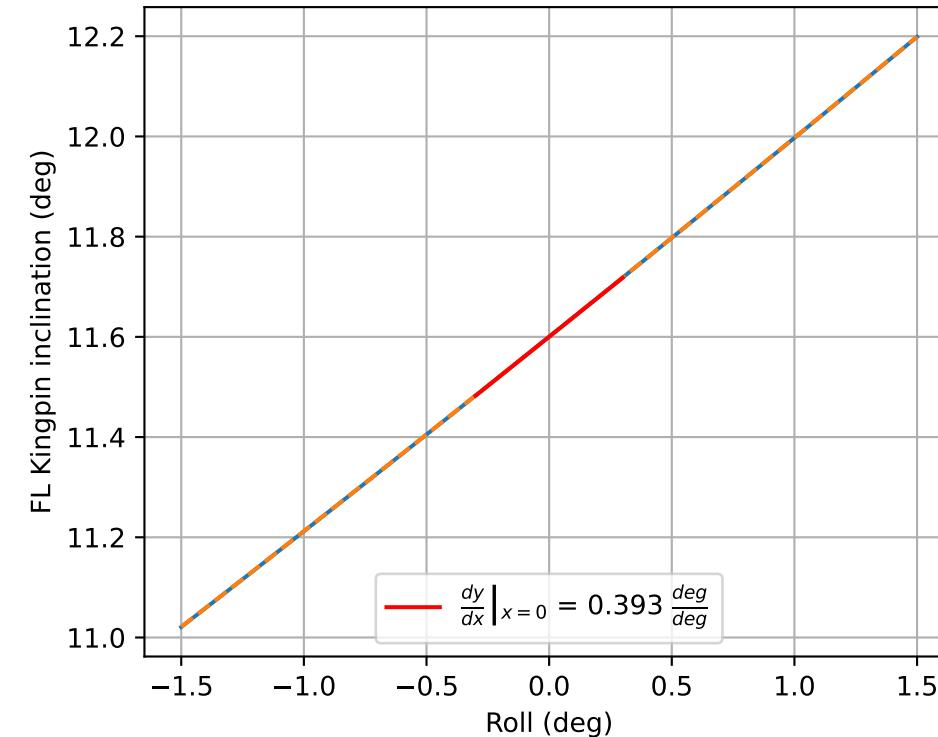
RR Roll Caster

**Cubic Fit**

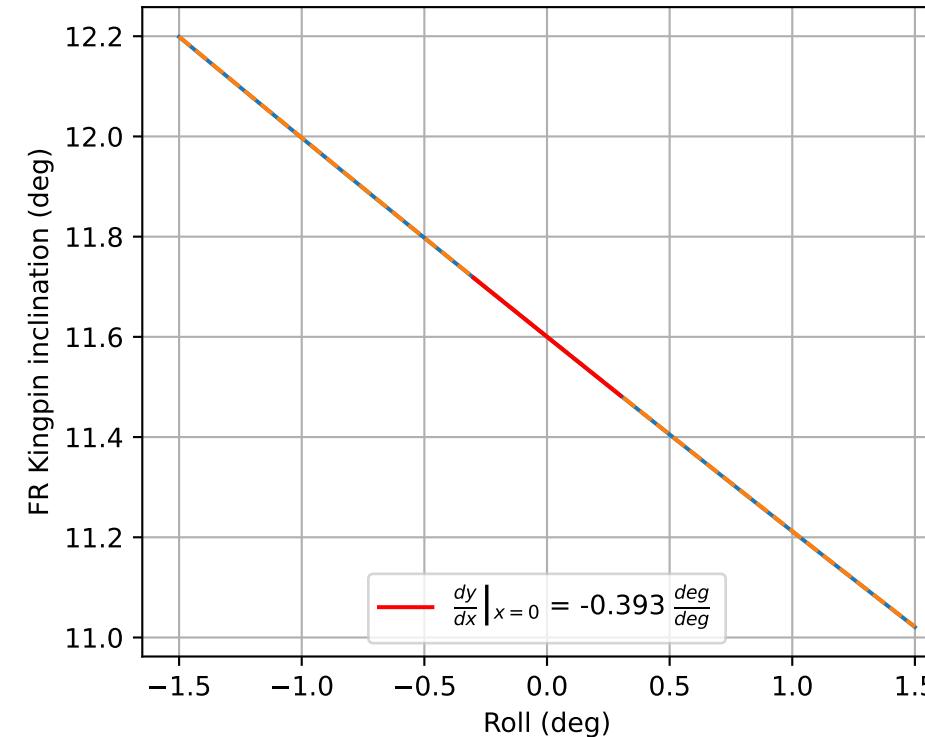
$$f(x) = a_3x^3 + a_2x^2 + a_1x + a_0$$

FL	$f(x) = 0.0x^3 + 0.0x^2 + -0.005x + 2.243$
FR	$f(x) = -0.0x^3 + 0.0x^2 + 0.005x + 2.243$
RL	$f(x) = 0.0x^3 + 0.0x^2 + -0.01x + 6.404$
RR	$f(x) = -0.0x^3 + 0.0x^2 + 0.01x + 6.404$

FL Roll KPI



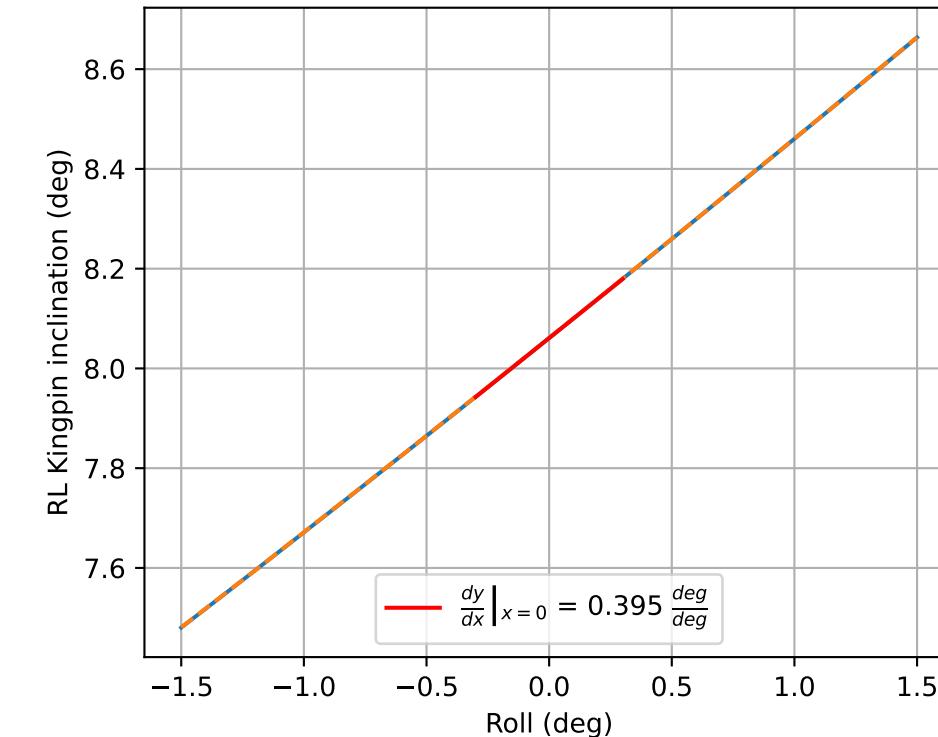
FR Roll KPI

**Linear Fit**

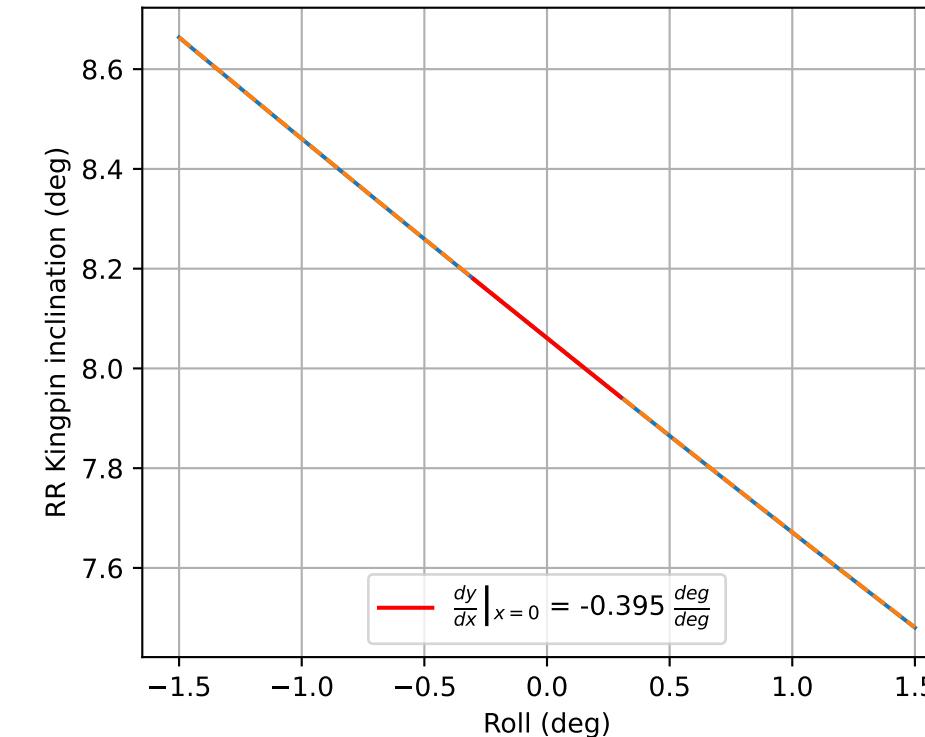
$$f(x) = a_1 x + a_0$$

FL	$f(x) = 0.393x + 11.6$
FR	$f(x) = -0.393x + 11.6$
RL	$f(x) = 0.395x + 8.061$
RR	$f(x) = -0.395x + 8.061$

RL Roll KPI



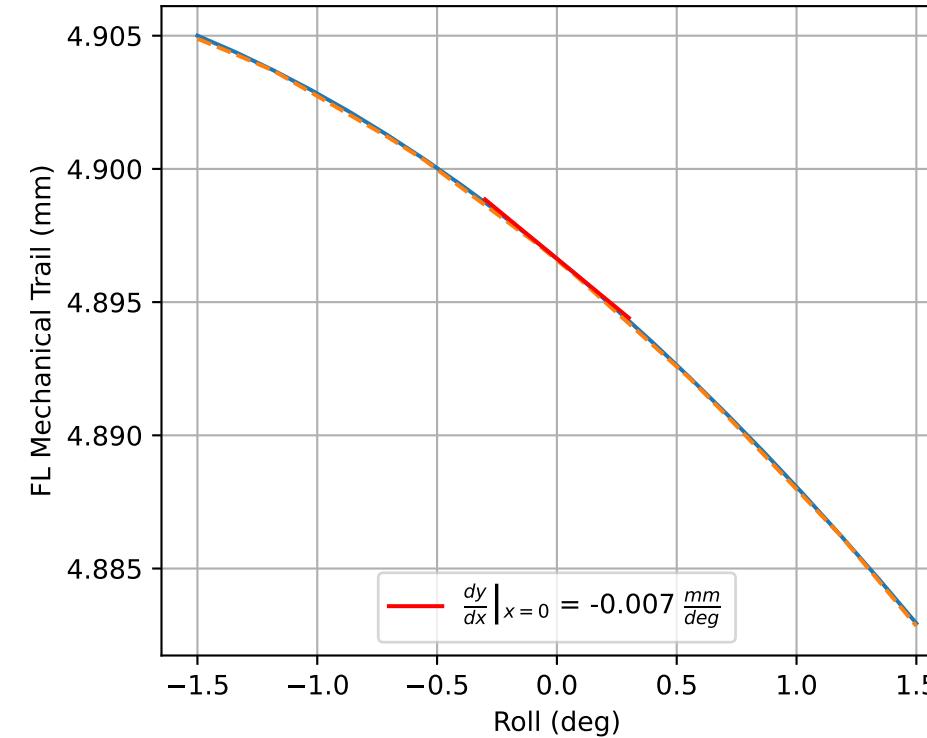
RR Roll KPI

**Cubic Fit**

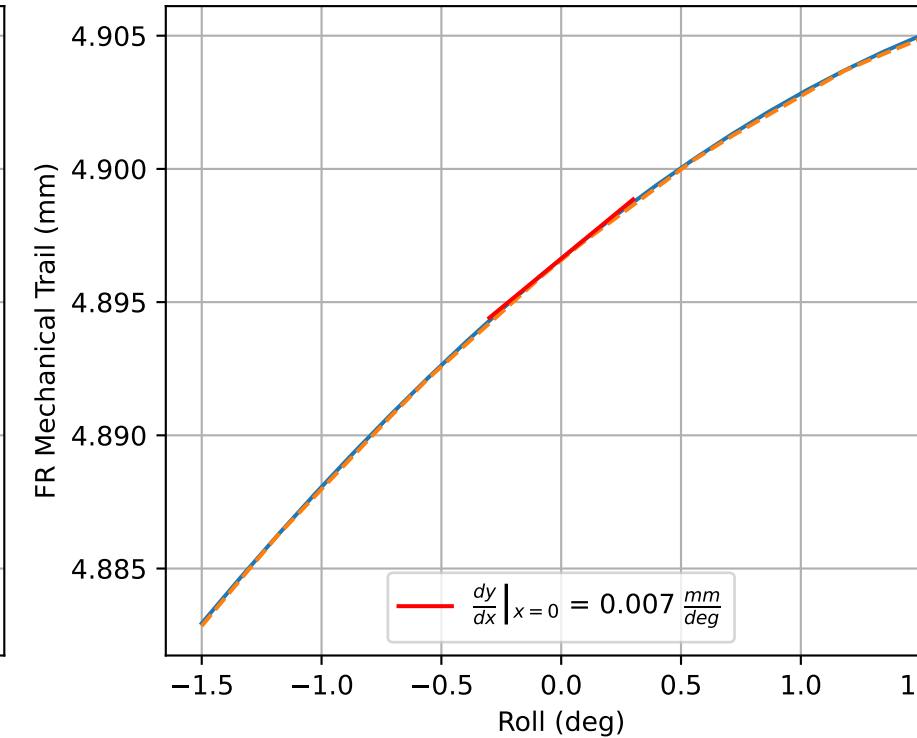
$$f(x) = a_3 x^3 + a_2 x^2 + a_1 x + a_0$$

FL	$f(x) = 0.0x^3 + 0.004x^2 + 0.393x + 11.6$
FR	$f(x) = -0.0x^3 + 0.004x^2 + -0.393x + 11.6$
RL	$f(x) = -0.0x^3 + 0.005x^2 + 0.395x + 8.061$
RR	$f(x) = 0.0x^3 + 0.005x^2 + -0.395x + 8.061$

FL Roll Mechanical Trail



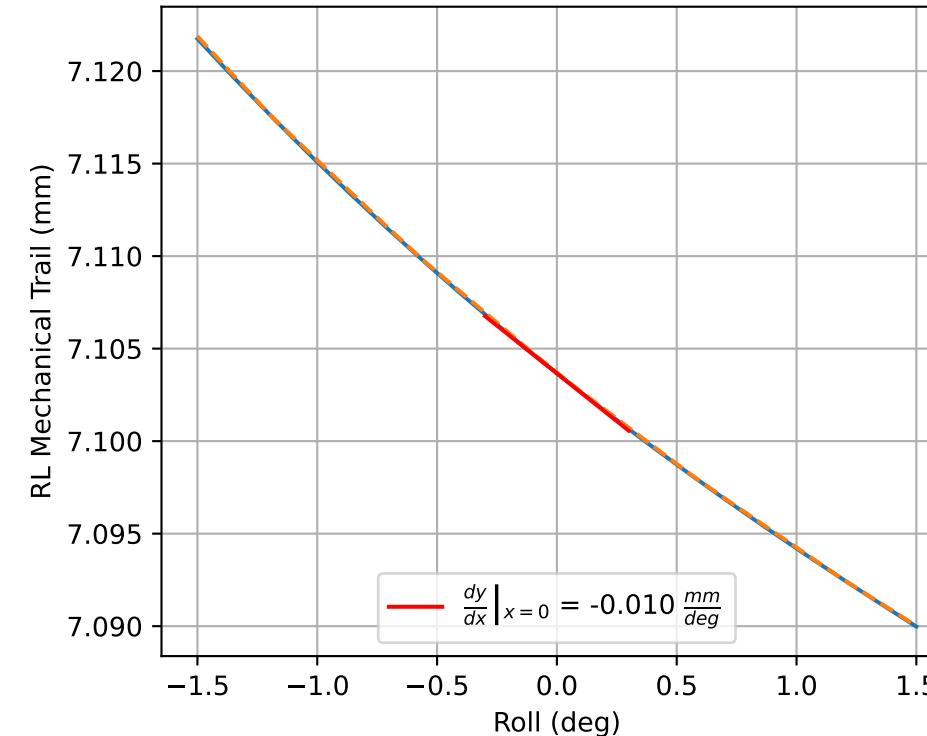
FR Roll Mechanical Trail

**Linear Fit**

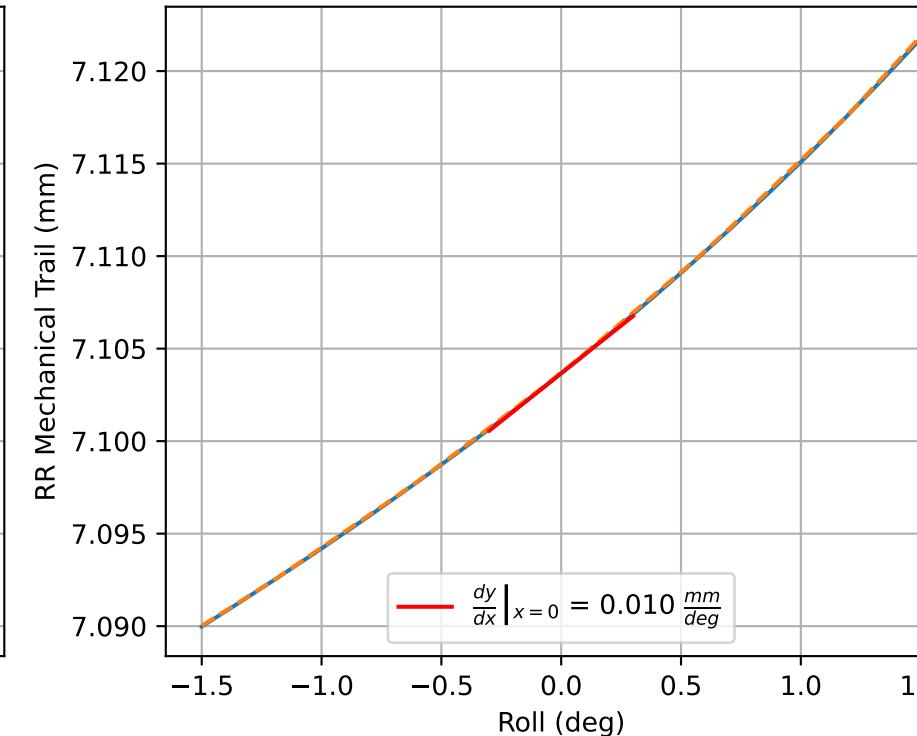
$$f(x) = a_1x + a_0$$

FL	$f(x) = -0.007x + 4.897$
FR	$f(x) = 0.007x + 4.897$
RL	$f(x) = -0.01x + 7.104$
RR	$f(x) = 0.01x + 7.104$

RL Roll Mechanical Trail



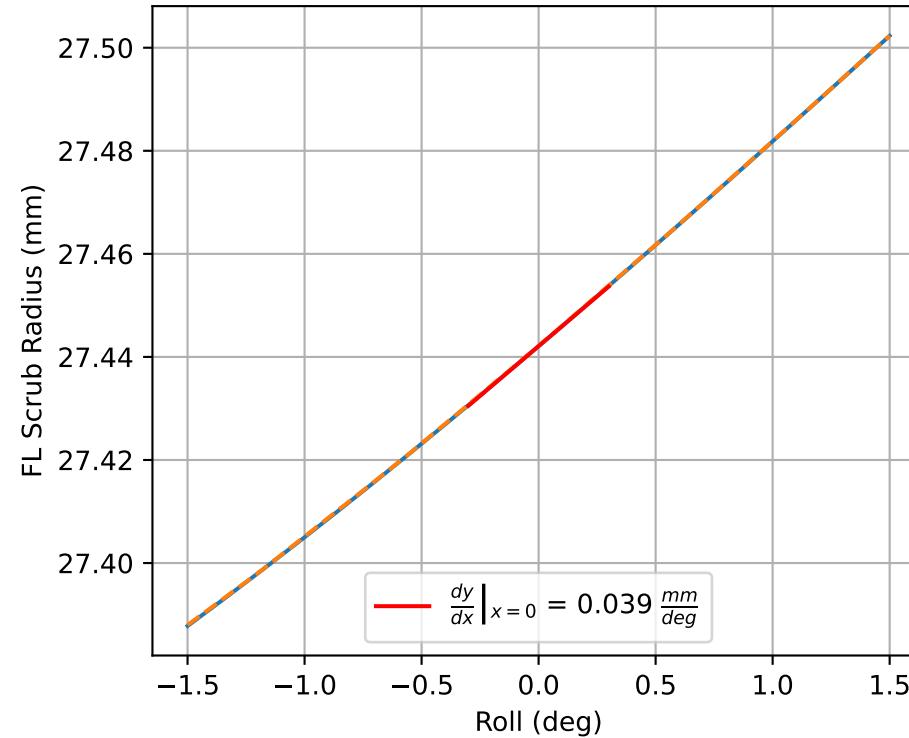
RR Roll Mechanical Trail

**Cubic Fit**

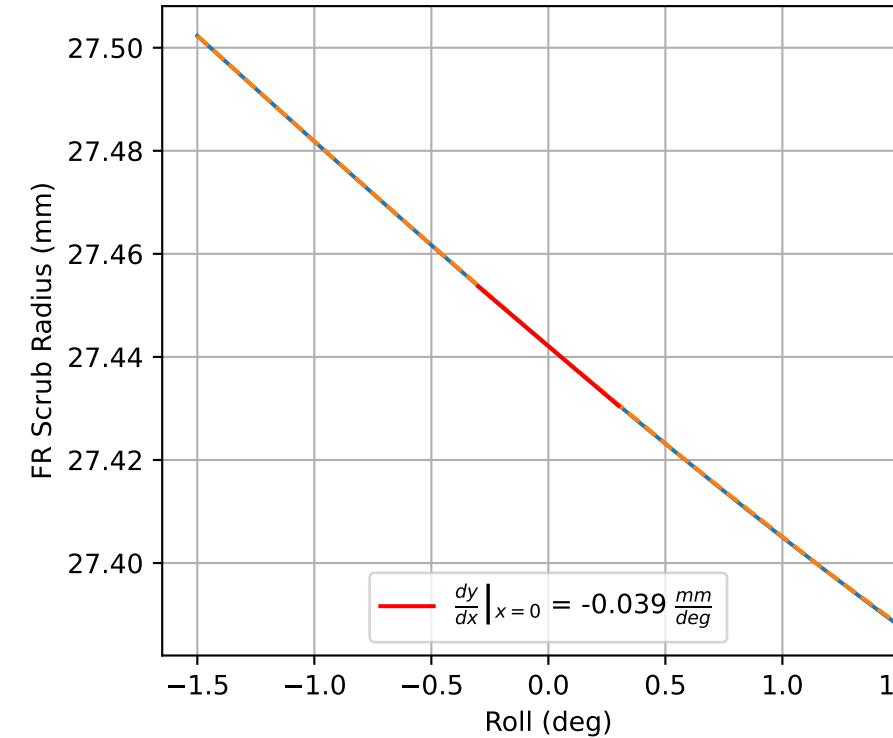
$$f(x) = a_3x^3 + a_2x^2 + a_1x + a_0$$

FL	$f(x) = 0.0x^3 + -0.001x^2 + -0.007x + 4.897$
FR	$f(x) = -0.0x^3 + -0.001x^2 + 0.007x + 4.897$
RL	$f(x) = -0.0x^3 + 0.001x^2 + -0.01x + 7.104$
RR	$f(x) = 0.0x^3 + 0.001x^2 + 0.01x + 7.104$

FL Roll Scrub Radius



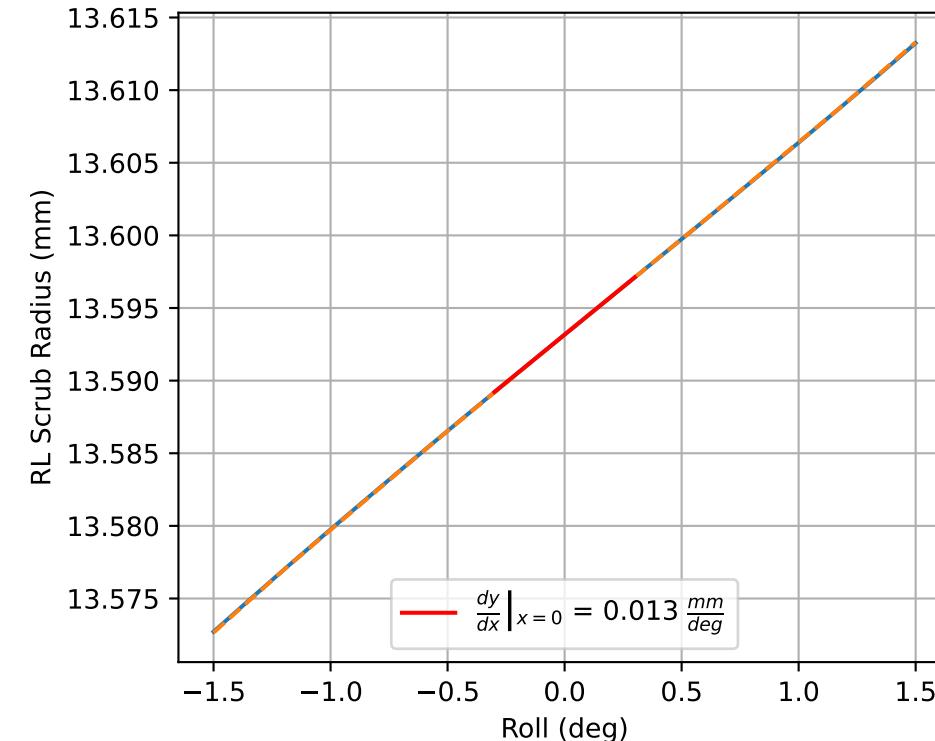
FR Roll Scrub Radius

**Linear Fit**

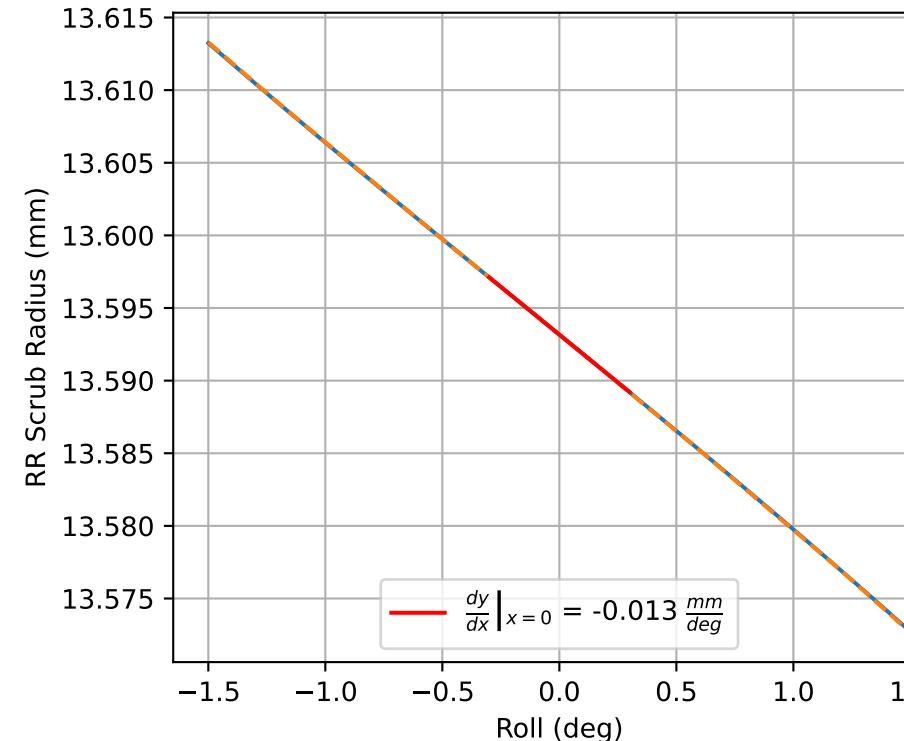
$$f(x) = a_1x + a_0$$

FL	$f(x) = 0.039x + 27.442$
FR	$f(x) = -0.039x + 27.442$
RL	$f(x) = 0.013x + 13.593$
RR	$f(x) = -0.013x + 13.593$

RL Roll Scrub Radius

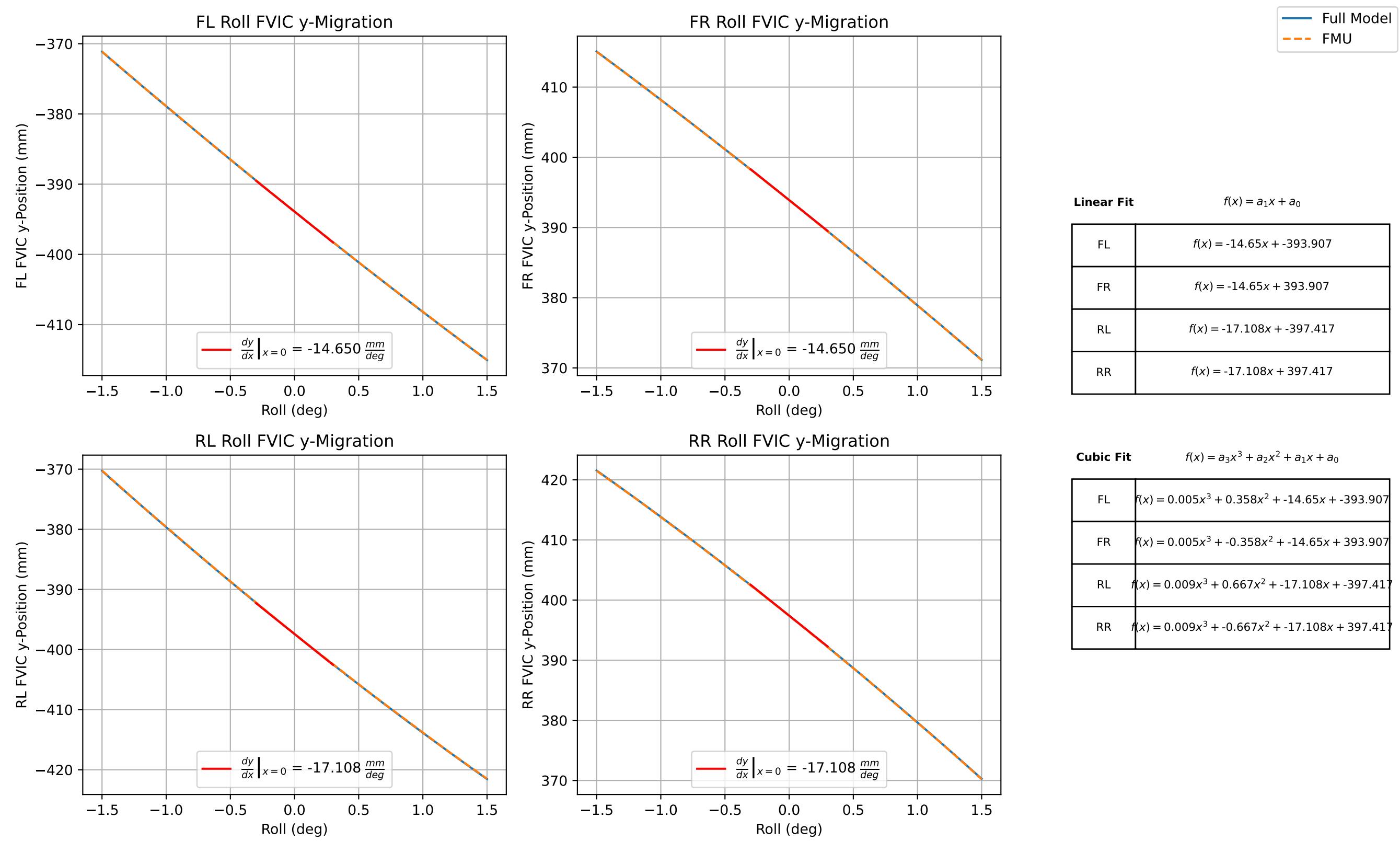


RR Roll Scrub Radius

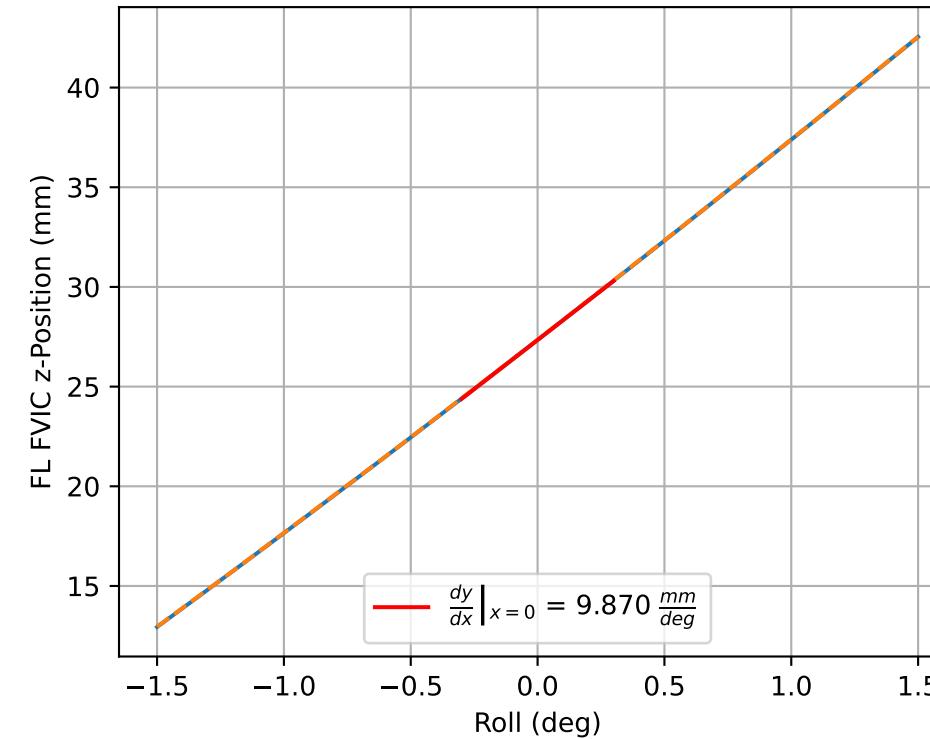
**Cubic Fit**

$$f(x) = a_3x^3 + a_2x^2 + a_1x + a_0$$

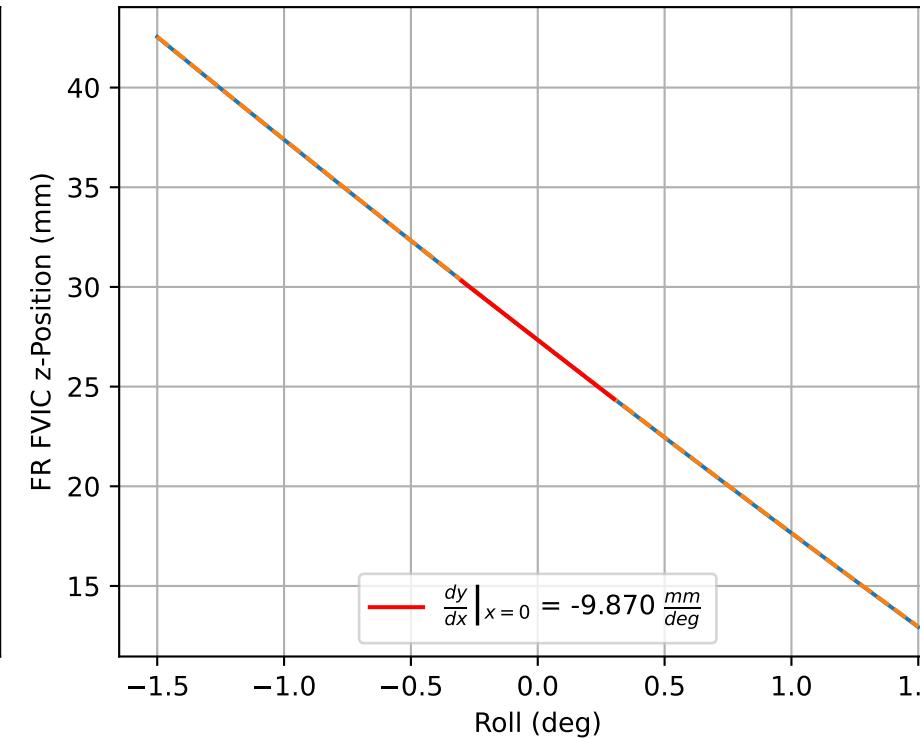
FL	$f(x) = -0.0x^3 + 0.001x^2 + 0.039x + 27.442$
FR	$f(x) = 0.0x^3 + 0.001x^2 - 0.039x + 27.442$
RL	$f(x) = 0.0x^3 - 0.0x^2 + 0.013x + 13.593$
RR	$f(x) = -0.0x^3 - 0.0x^2 - 0.013x + 13.593$



FL Roll FVIC z-Migration



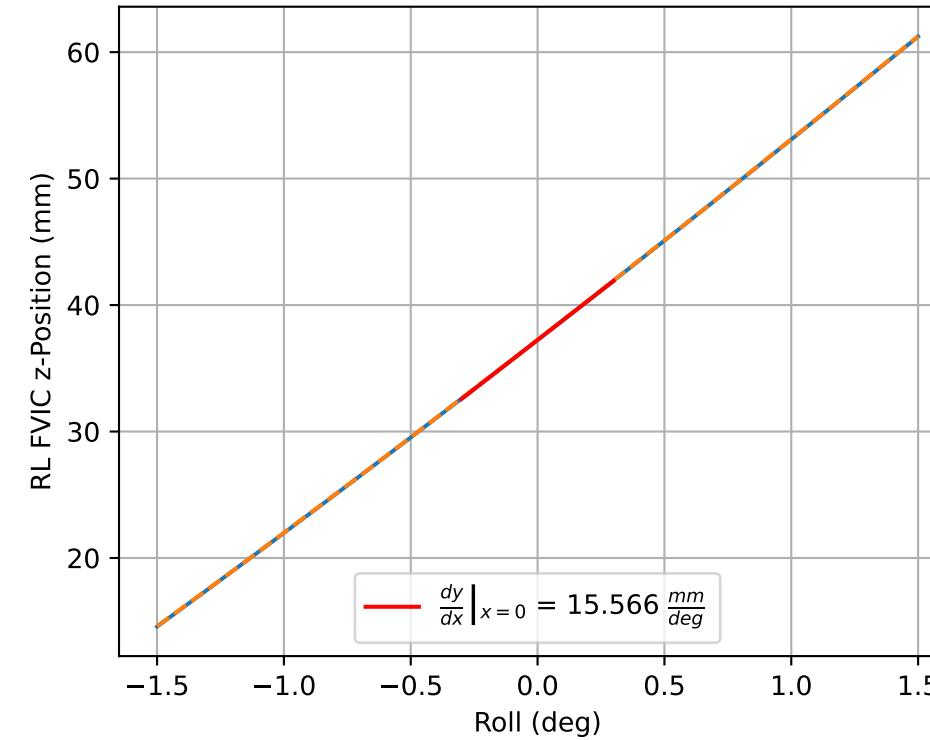
FR Roll FVIC z-Migration

**Linear Fit**

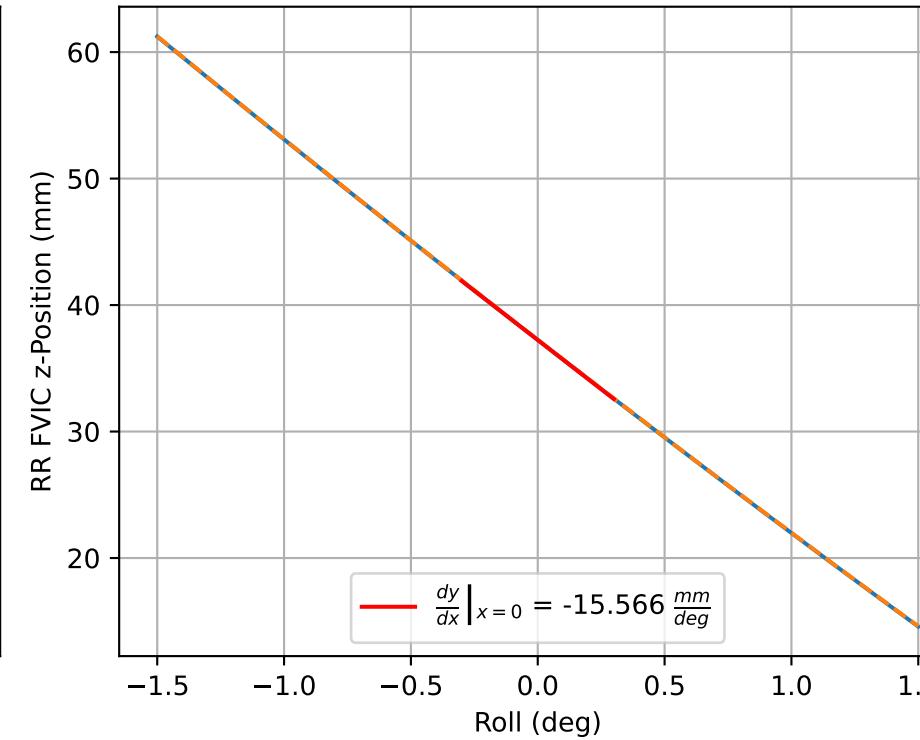
$$f(x) = a_1x + a_0$$

FL	$f(x) = 9.87x + 27.34$
FR	$f(x) = -9.87x + 27.34$
RL	$f(x) = 15.566x + 37.239$
RR	$f(x) = -15.566x + 37.239$

RL Roll FVIC z-Migration

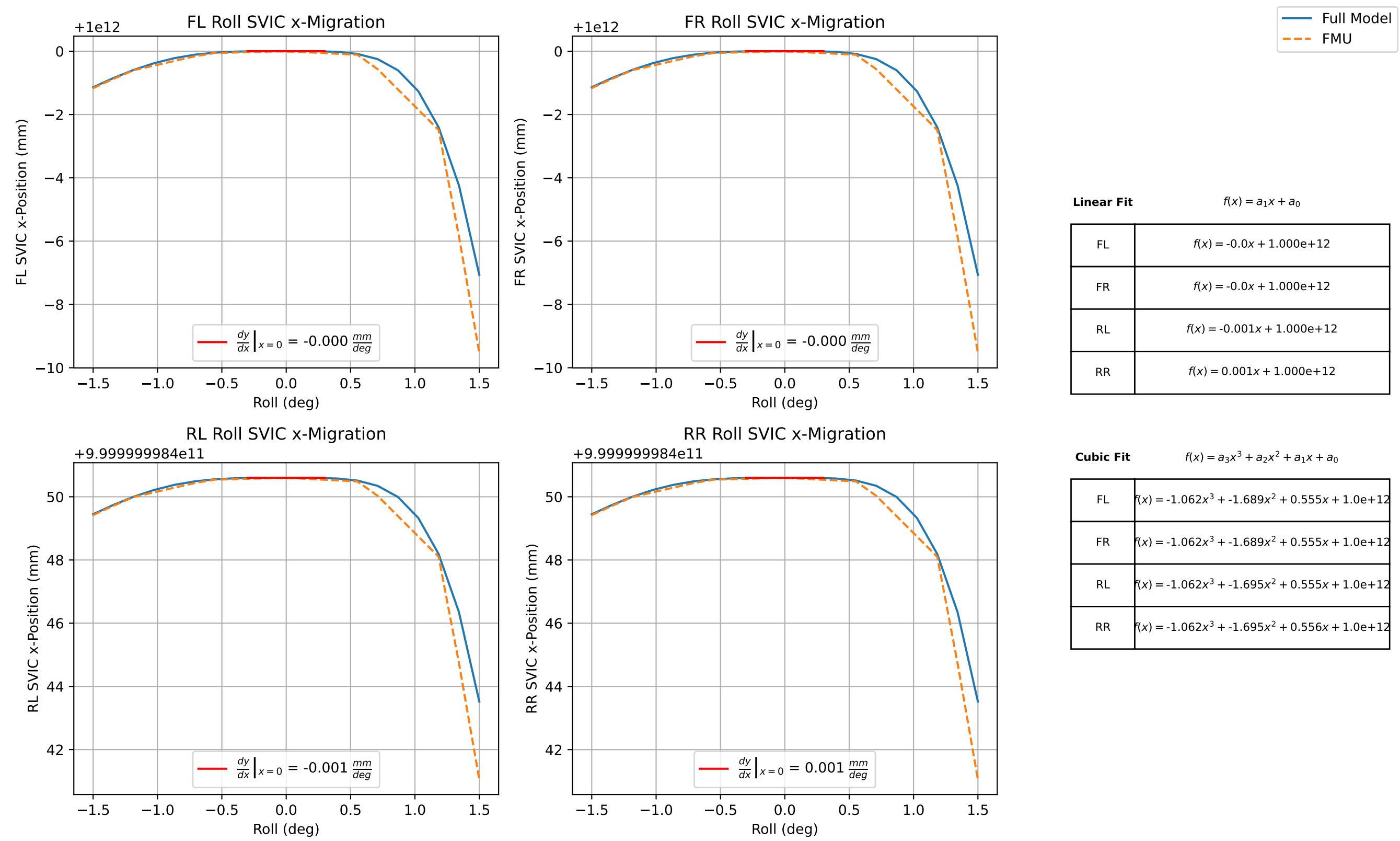


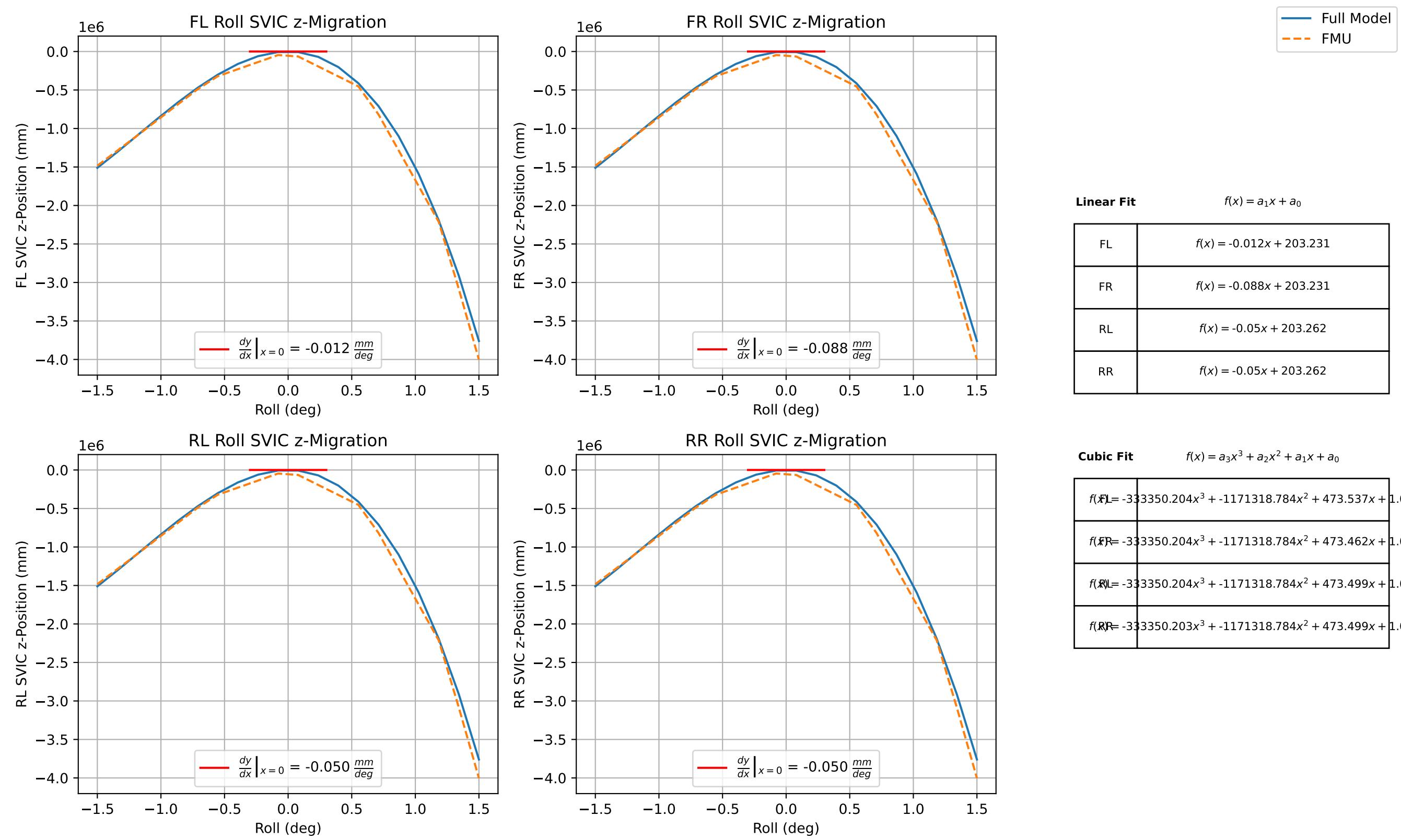
RR Roll FVIC z-Migration

**Cubic Fit**

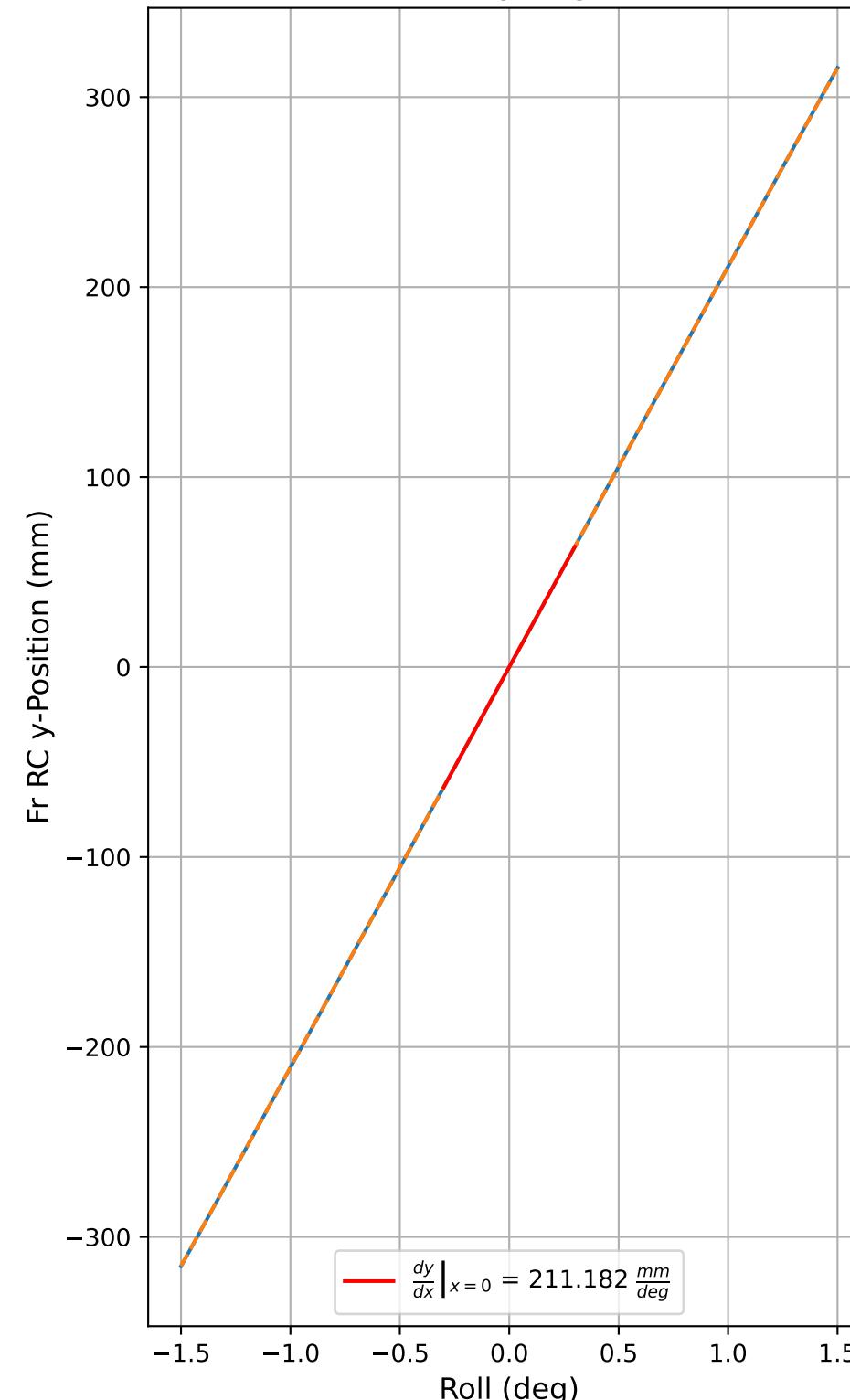
$$f(x) = a_3x^3 + a_2x^2 + a_1x + a_0$$

FL	$f(x) = -0.002x^3 + 0.178x^2 + 9.87x + 27.34$
FR	$f(x) = 0.002x^3 + 0.178x^2 - 9.87x + 27.34$
RL	$f(x) = -0.006x^3 + 0.296x^2 + 15.566x + 37.239$
RR	$f(x) = 0.007x^3 + 0.296x^2 - 15.566x + 37.239$

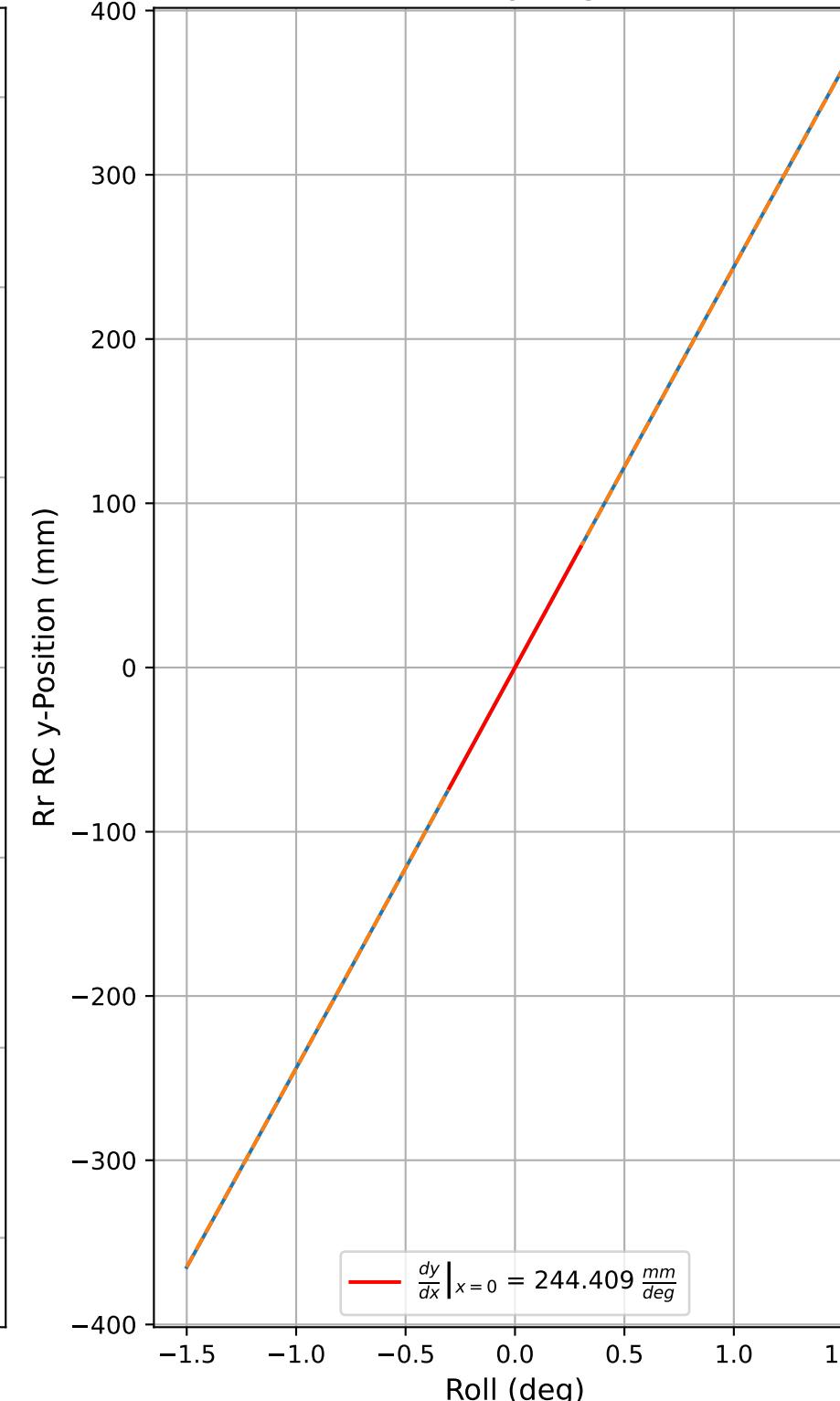




Fr Roll RC y-Migration



Rr Roll RC y-Migration

**Linear Fit**

$$f(x) = a_1x + a_0$$

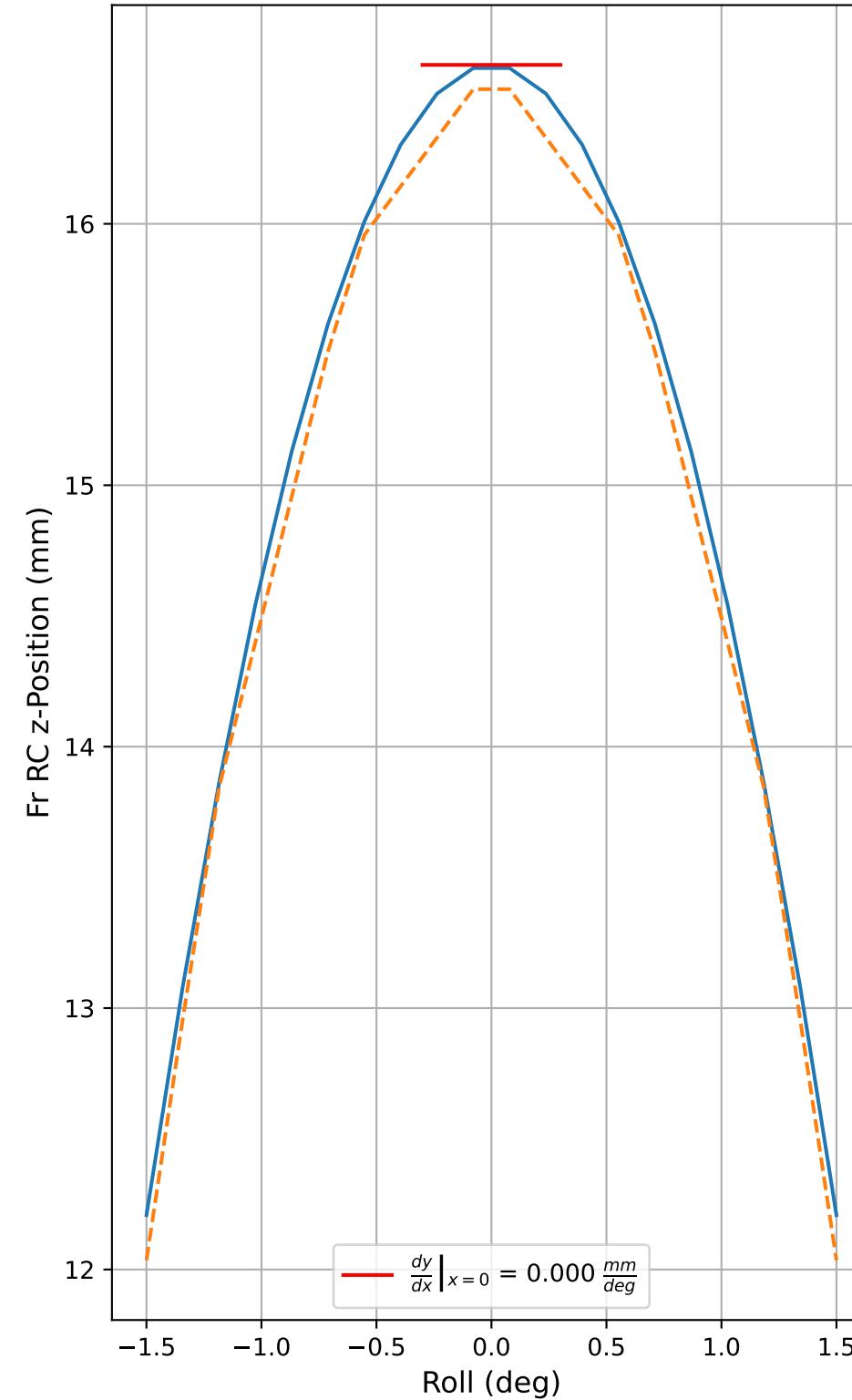
Fr	$f(x) = 211.182x + -0.0$
Rr	$f(x) = 244.409x + 0.0$

Cubic Fit

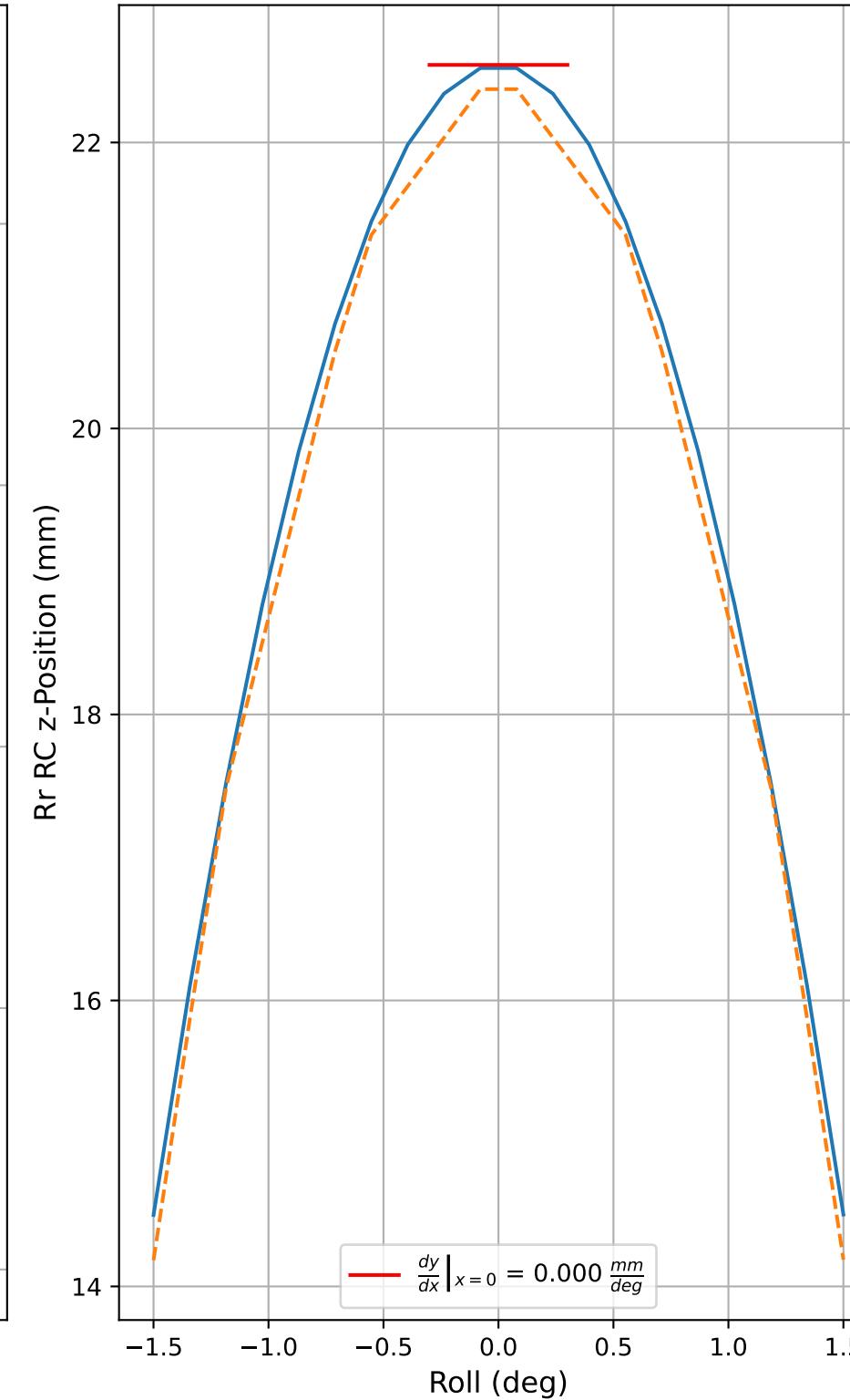
$$f(x) = a_3x^3 + a_2x^2 + a_1x + a_0$$

Fr	$f(x) = -0.387x^3 + -0.0x^2 + 211.182x + 0.0$
Rr	$f(x) = -0.442x^3 + -0.0x^2 + 244.409x + 0.0$

Fr Roll RC z-Migration



Rr Roll RC z-Migration



Linear Fit

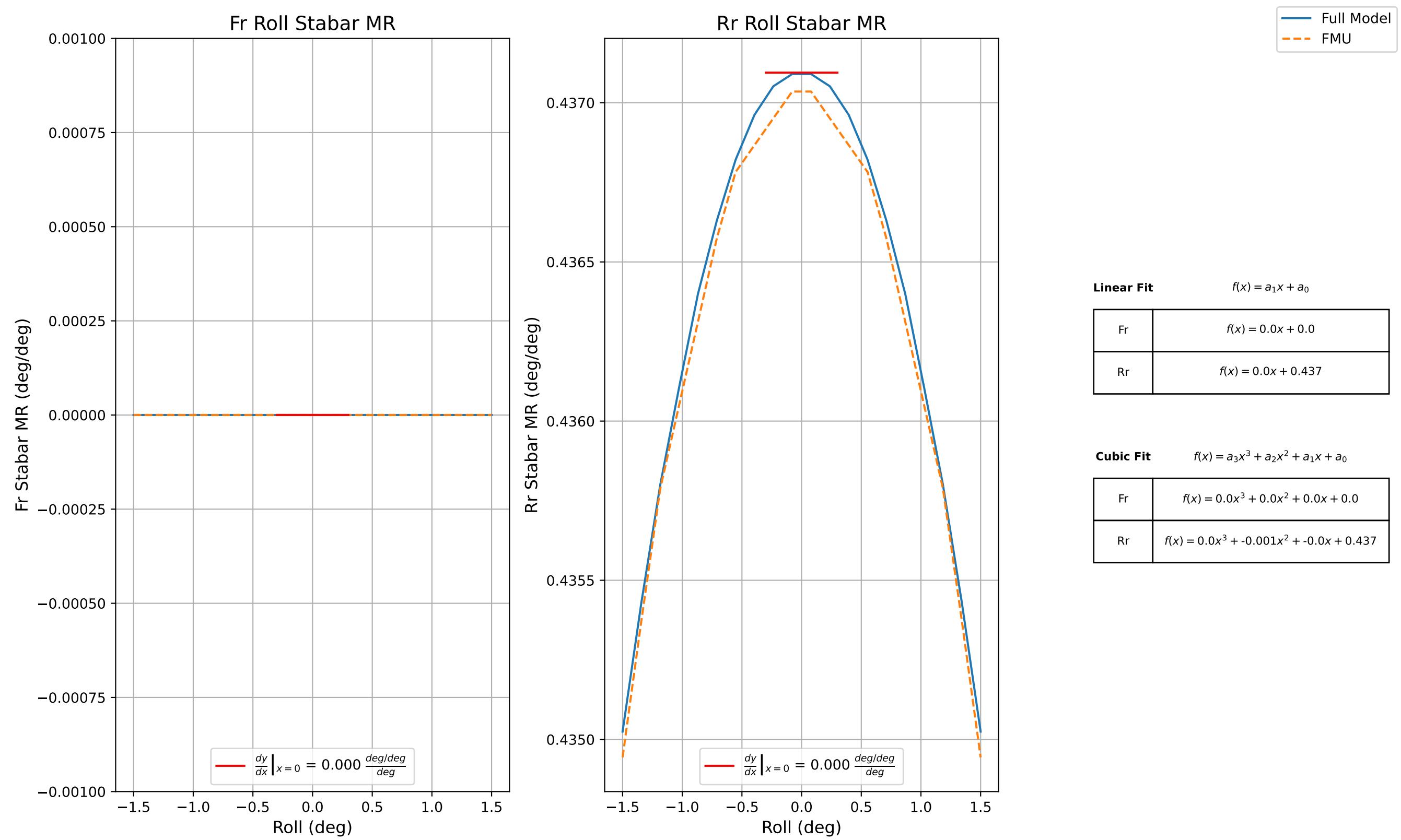
$$f(x) = a_1x + a_0$$

Fr	$f(x) = 0.0x + 16.608$
Rr	$f(x) = 0.0x + 22.543$

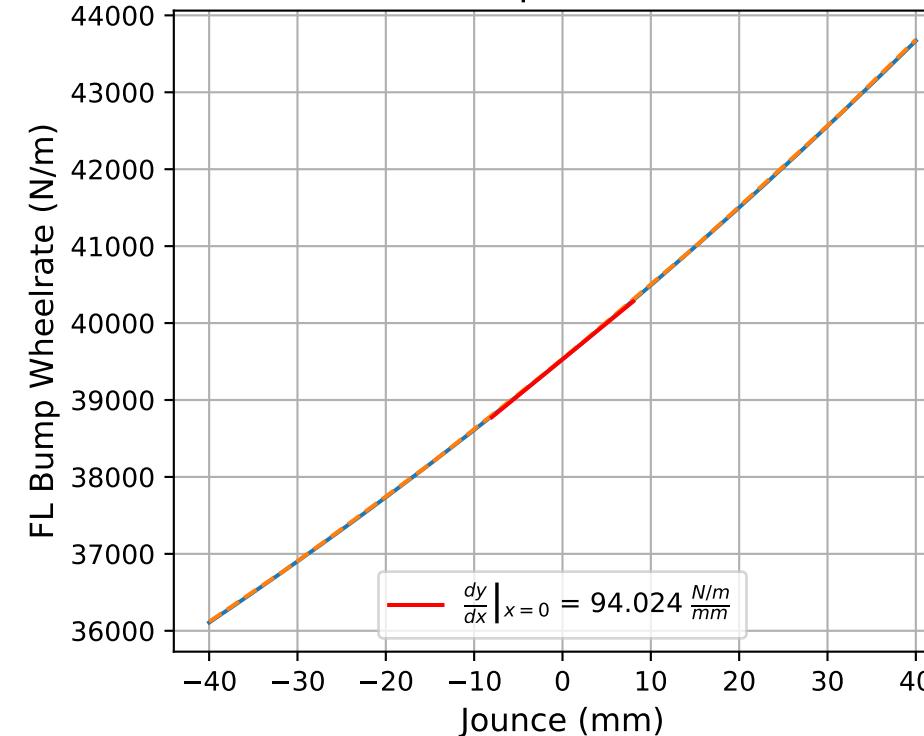
Cubic Fit

$$f(x) = a_3x^3 + a_2x^2 + a_1x + a_0$$

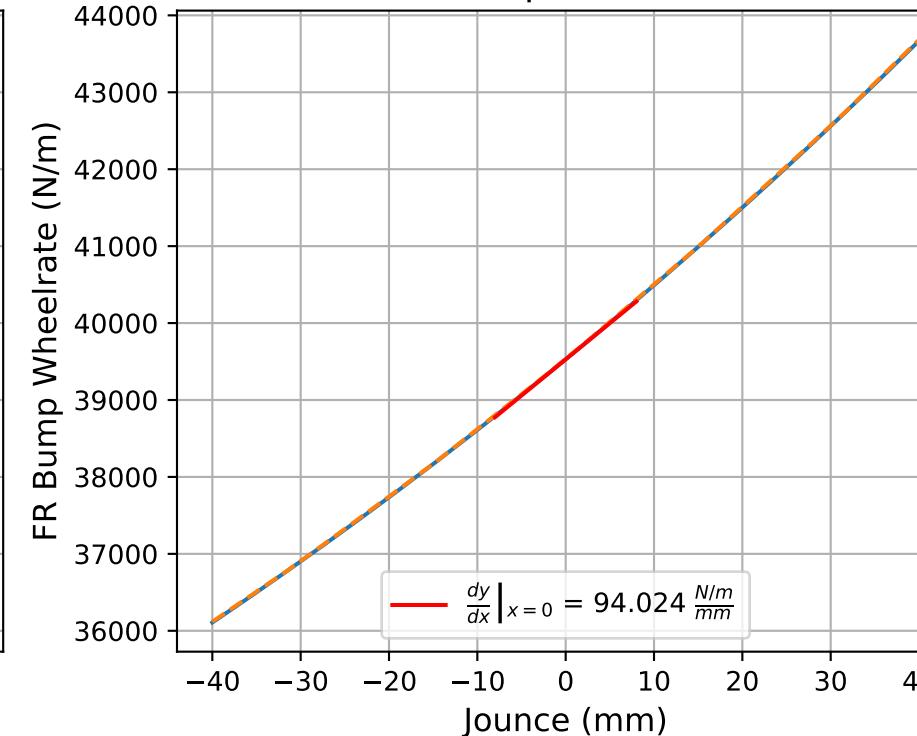
Fr	$f(x) = 0.0x^3 + -1.956x^2 + -0.0x + 16.606$
Rr	$f(x) = 0.001x^3 + -3.575x^2 + -0.0x + 22.54$



FL Bump Wheelrate



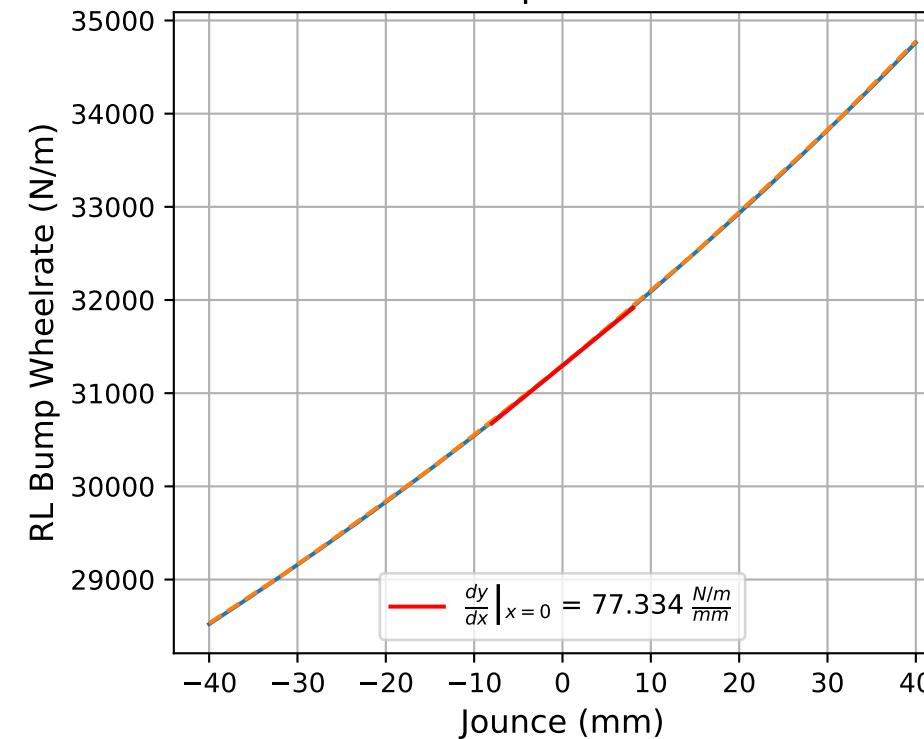
FR Bump Wheelrate

**Linear Fit**

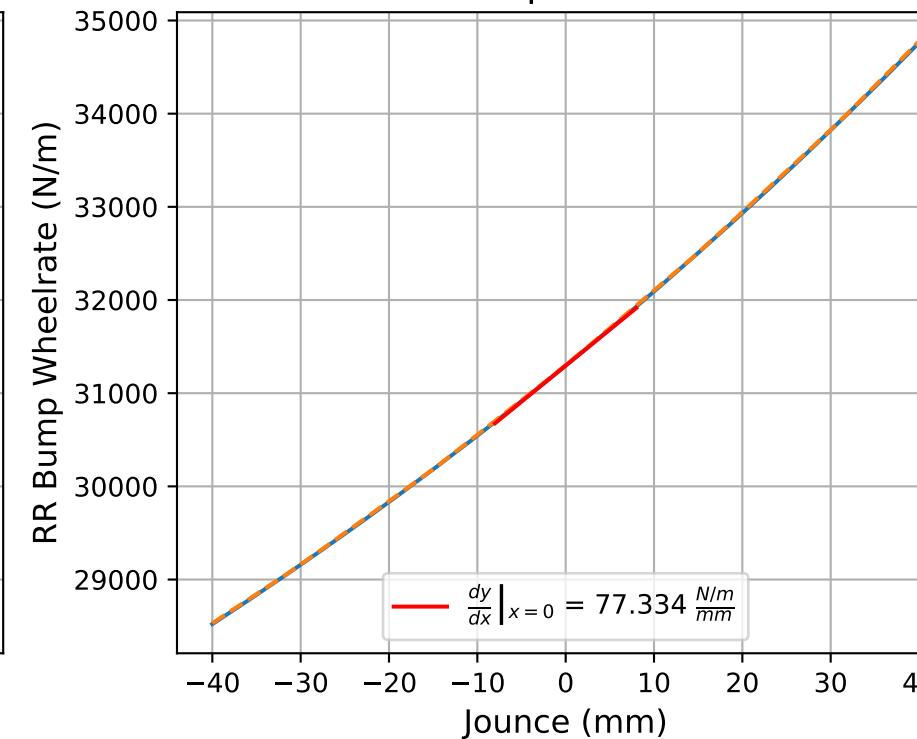
$$f(x) = a_1x + a_0$$

FL	$f(x) = 94.024x + 3.953e+04$
FR	$f(x) = 94.024x + 3.953e+04$
RL	$f(x) = 77.334x + 3.130e+04$
RR	$f(x) = 77.334x + 3.130e+04$

RL Bump Wheelrate



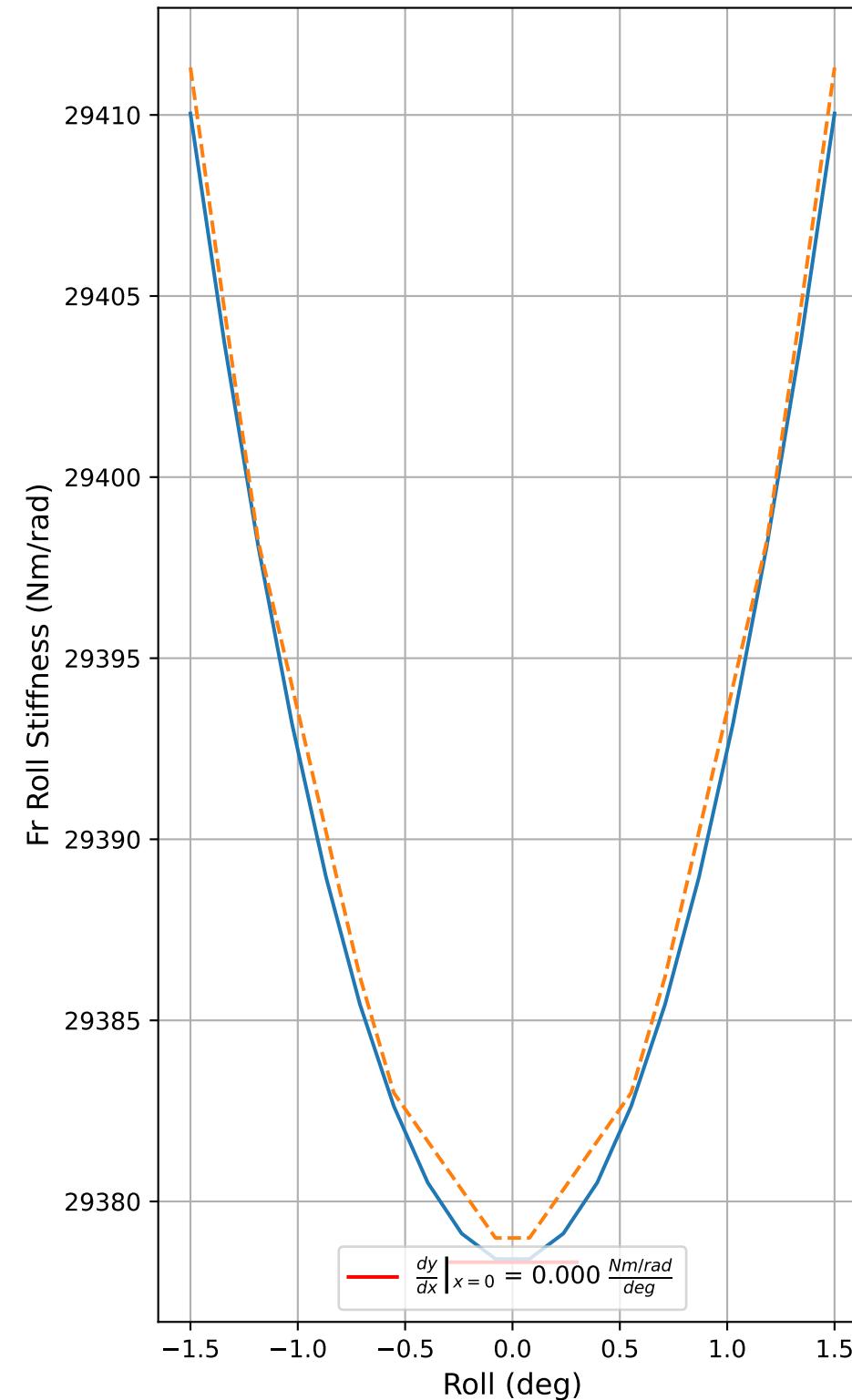
RR Bump Wheelrate

**Cubic Fit**

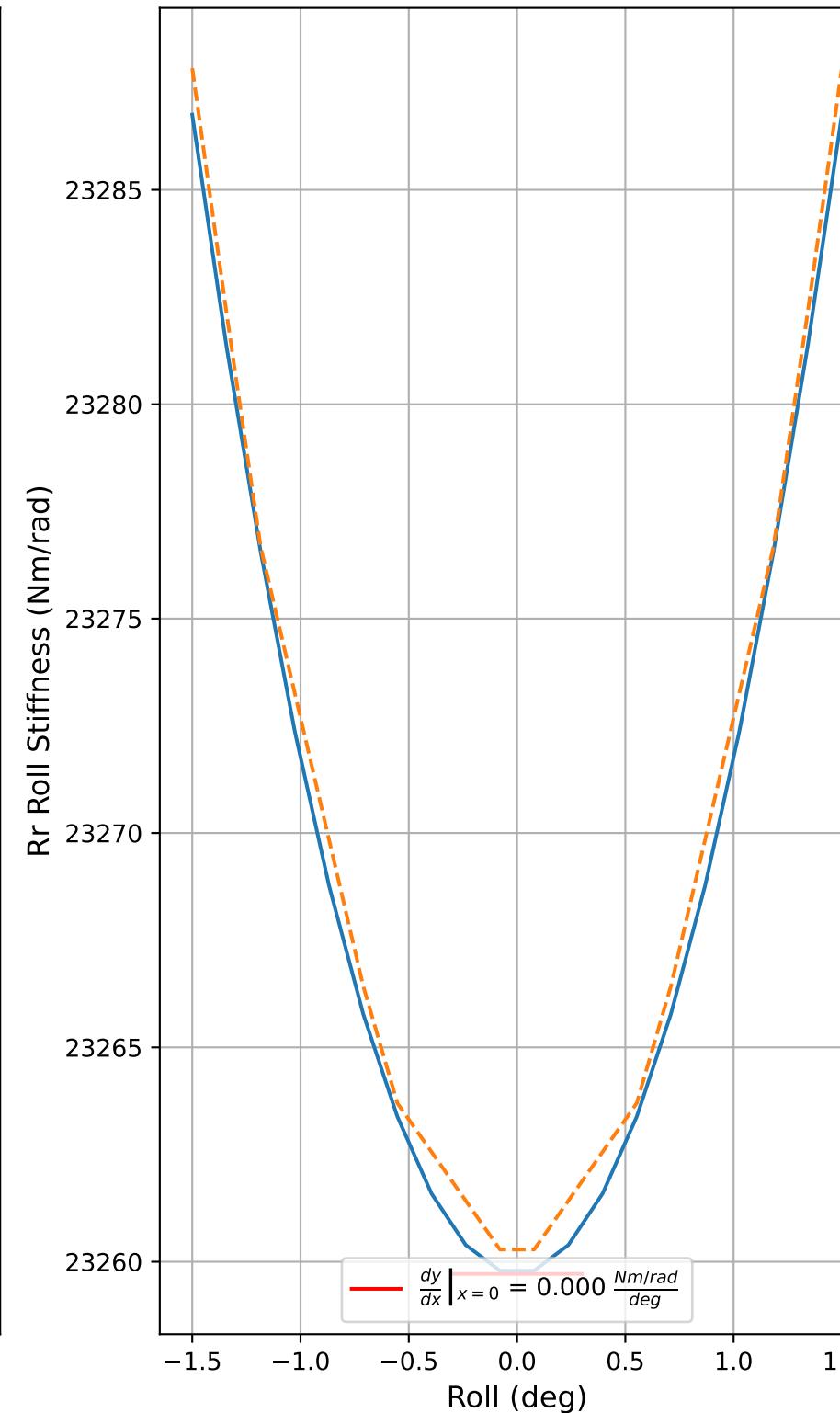
$$f(x) = a_3x^3 + a_2x^2 + a_1x + a_0$$

FL	$f(x) = 0.0x^3 + 0.225x^2 + 94.027x + 4.0e+04$
FR	$f(x) = 0.0x^3 + 0.225x^2 + 94.027x + 4.0e+04$
RL	$f(x) = 0.0x^3 + 0.216x^2 + 77.334x + 3.1e+04$
RR	$f(x) = 0.0x^3 + 0.216x^2 + 77.334x + 3.1e+04$

Fr Roll Stiffness



Rr Roll Stiffness

**Linear Fit**

$$f(x) = a_1x + a_0$$

Fr	$f(x) = 0.0x + 29378.323$
Rr	$f(x) = 0.0x + 23259.717$

Cubic Fit

$$f(x) = a_3x^3 + a_2x^2 + a_1x + a_0$$

Fr	$f(x) = 0.0x^3 + 14.096x^2 + -0.0x + 29378.323$
Rr	$f(x) = -0.0x^3 + 12.015x^2 + -0.0x + 23259.715$