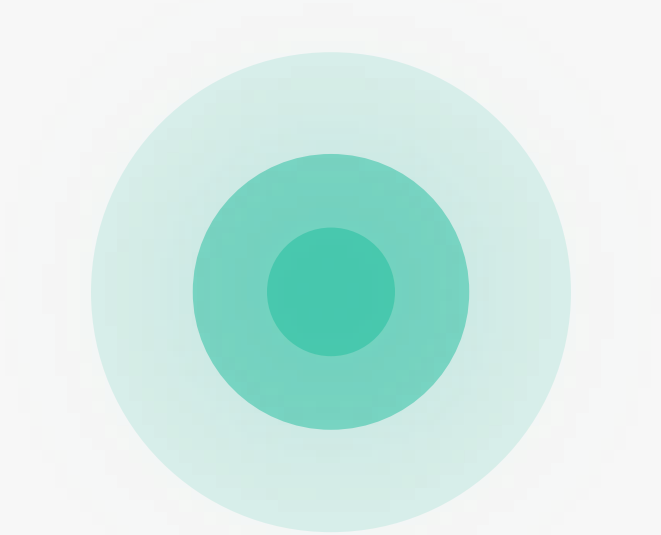
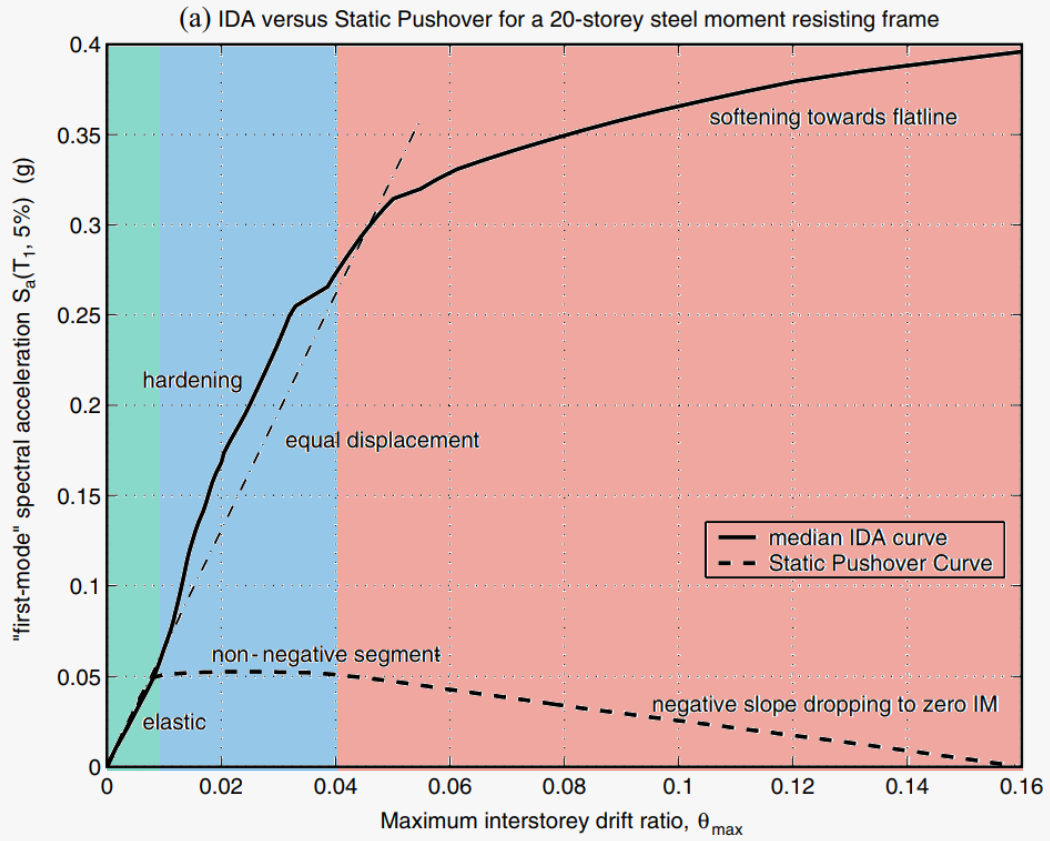


MULTI-CUT REBAR(12)

Advisor : Prof. K.C.Chang

Presenters : You-Ran Nai

NON-LINEAR SPO



ELASTIC

➔ MATCH

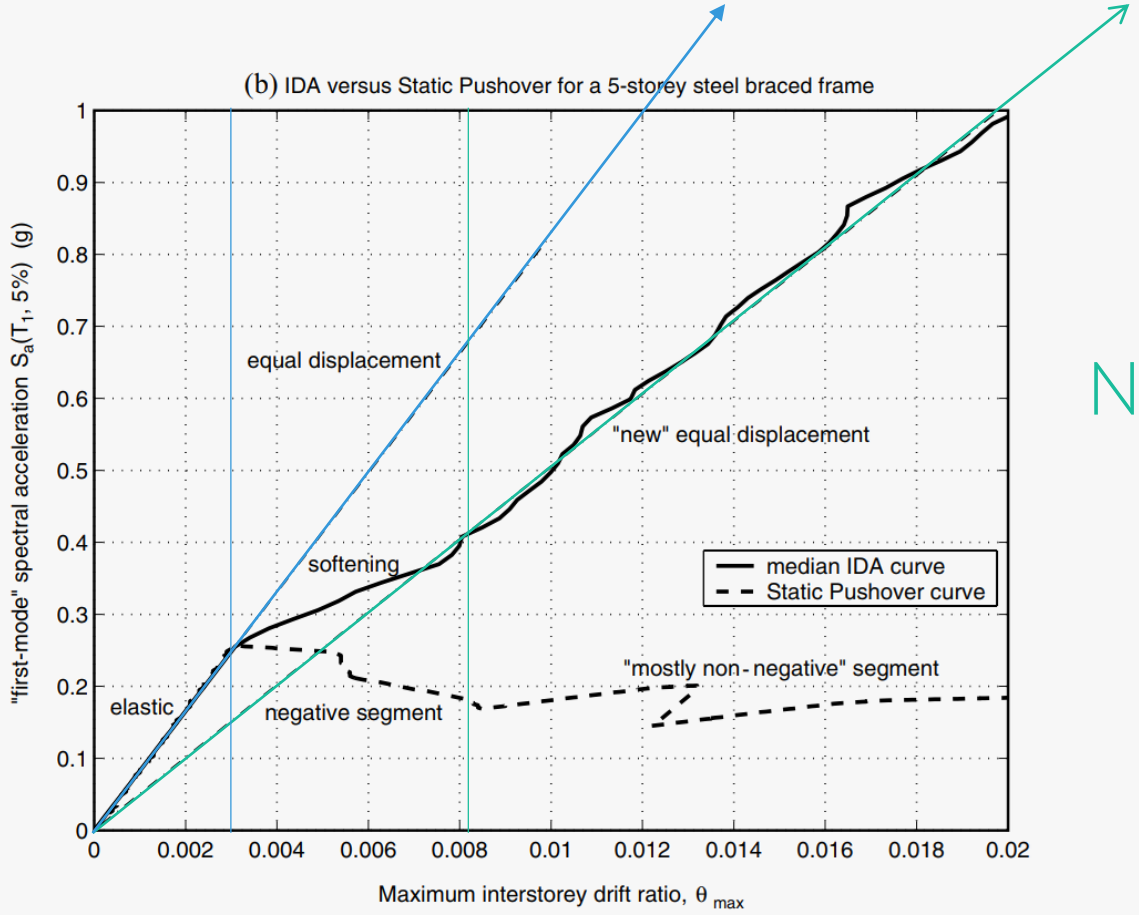
NON-NEGATIVE

➔ EQUAL DISPLACEMENT

NEGATIVE

➔ SOFTENING

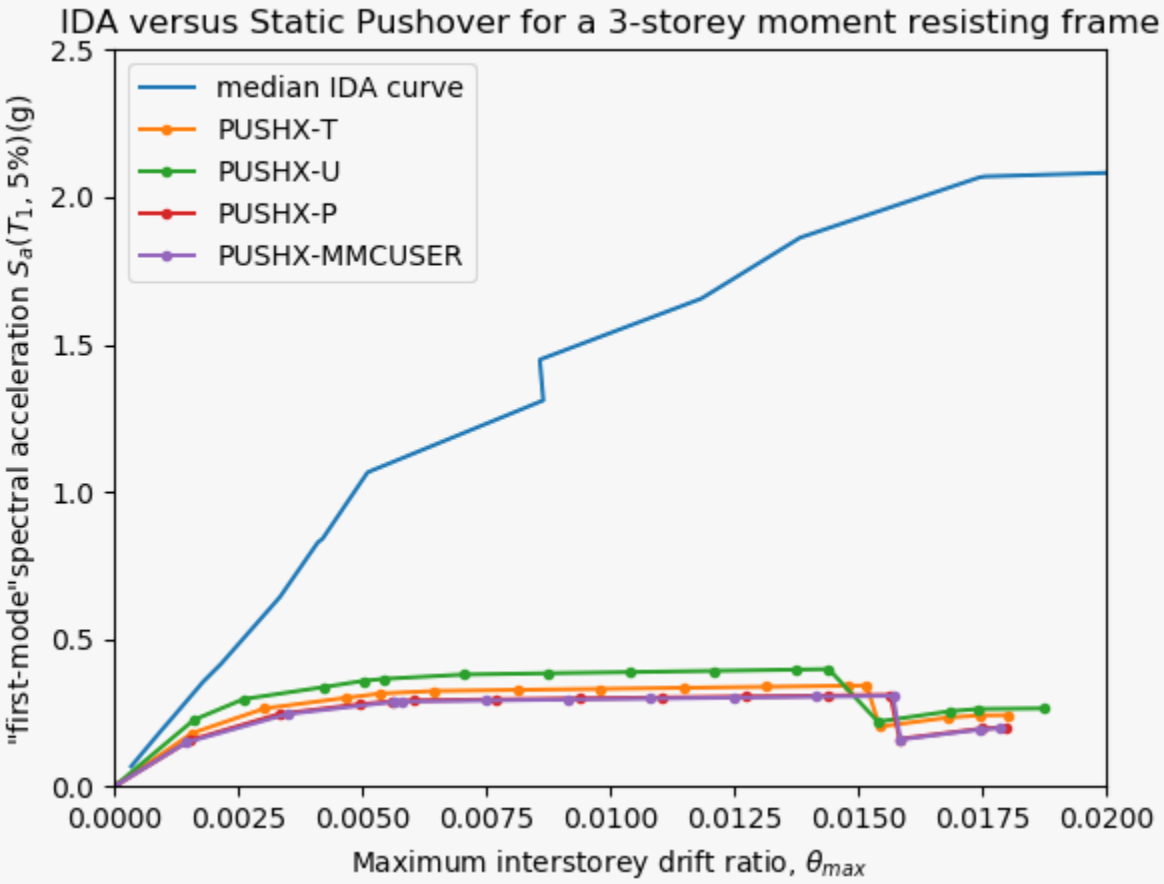
NON-LINEAR SPO

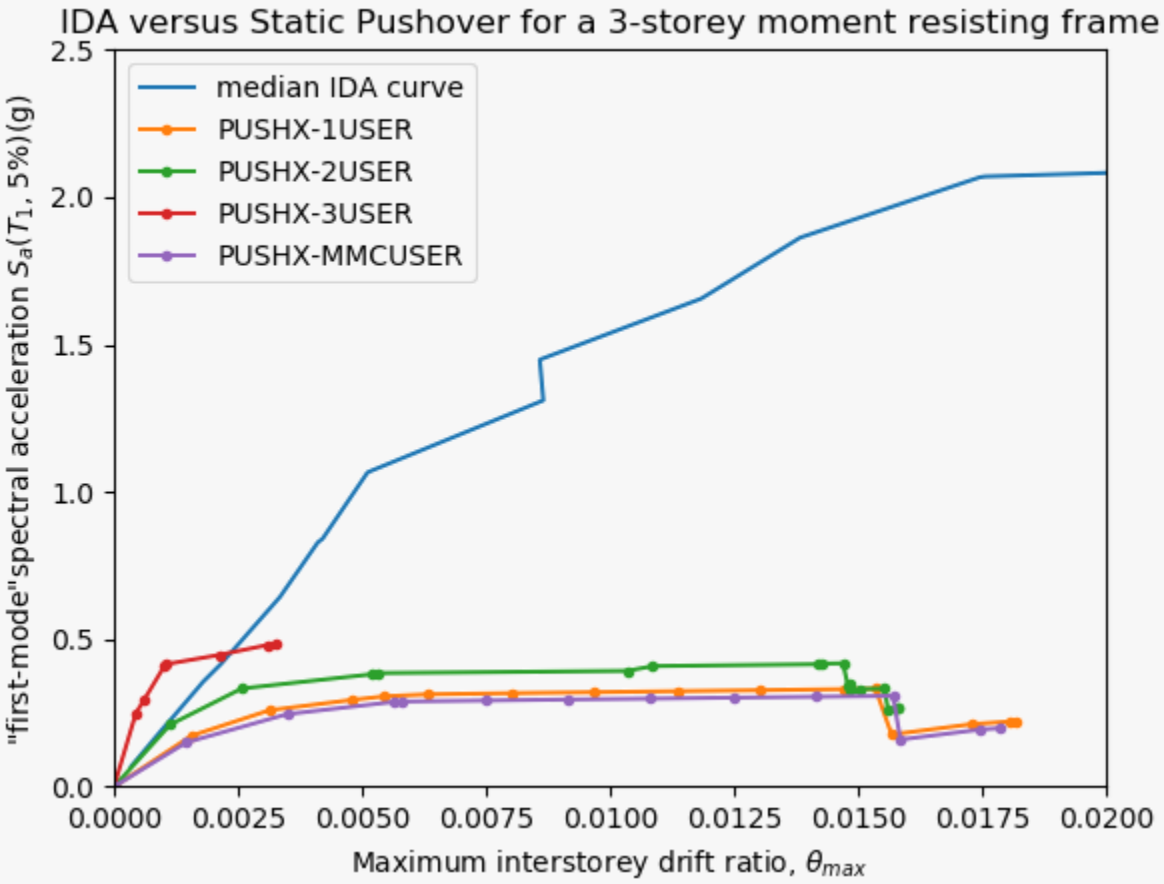


NEGATIVE => NON-NEGATIVE

➔ NEW EQUAL DISPLACEMENT

Problem: Pushover too Low





Defined

"$first\text{-}mode"spectral\ acceleration\ S_a(T_1, 5\%)(g)$

$T_1 = first - mode\ period$

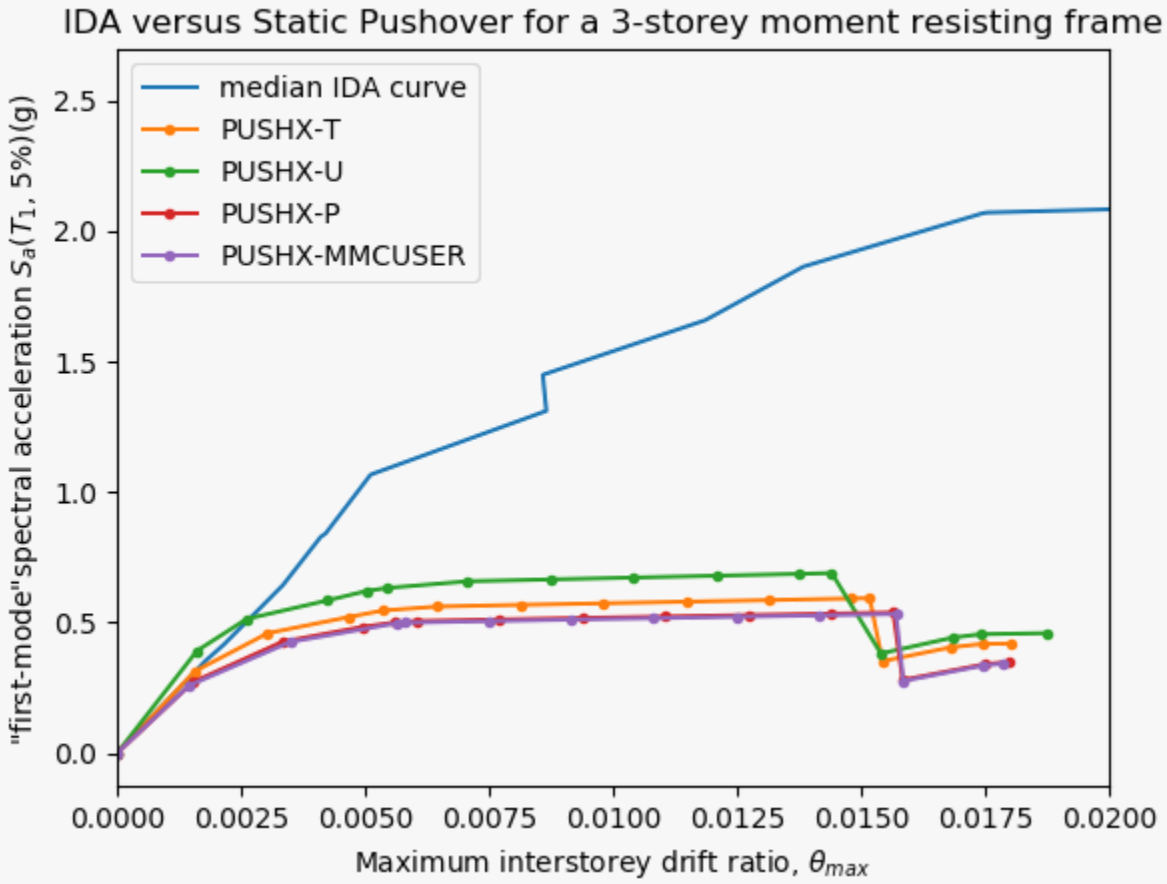
$\longrightarrow \quad S_a$

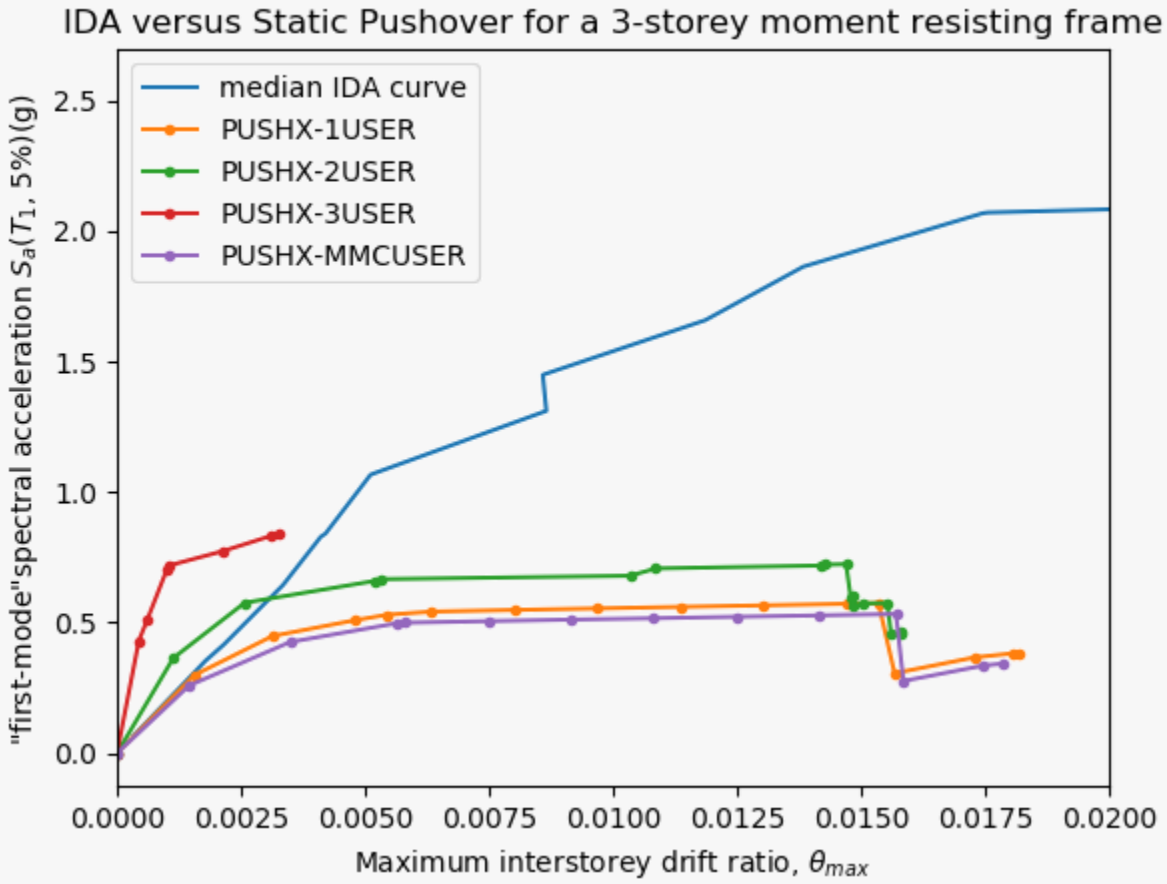
$Sa = V/\alpha_1 M$

$\alpha_1 = Modal\ Mass\ Coefficient\ for\ the\ First\ Natural\ Mode.$

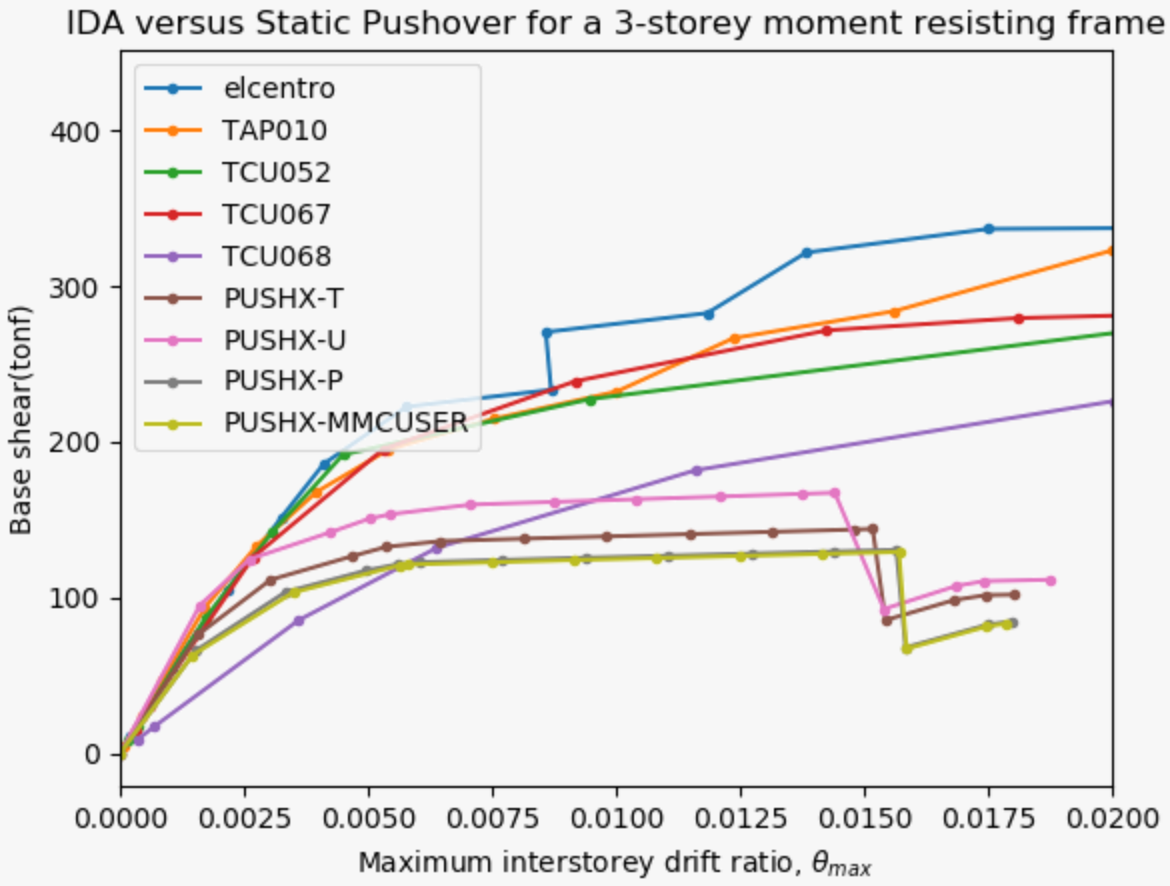
$M = 1.0DL + 0.5LL?\ 1.0DL?$

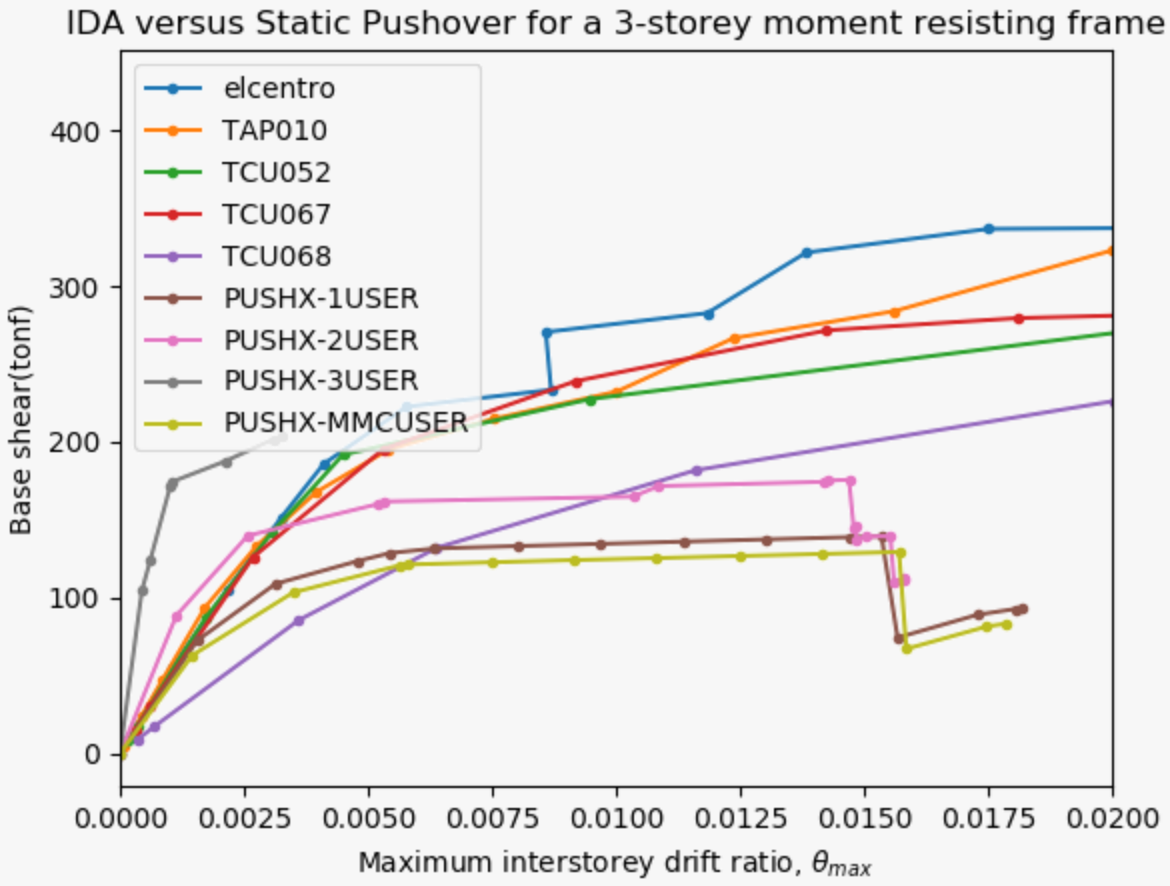
Close, but still have Gap



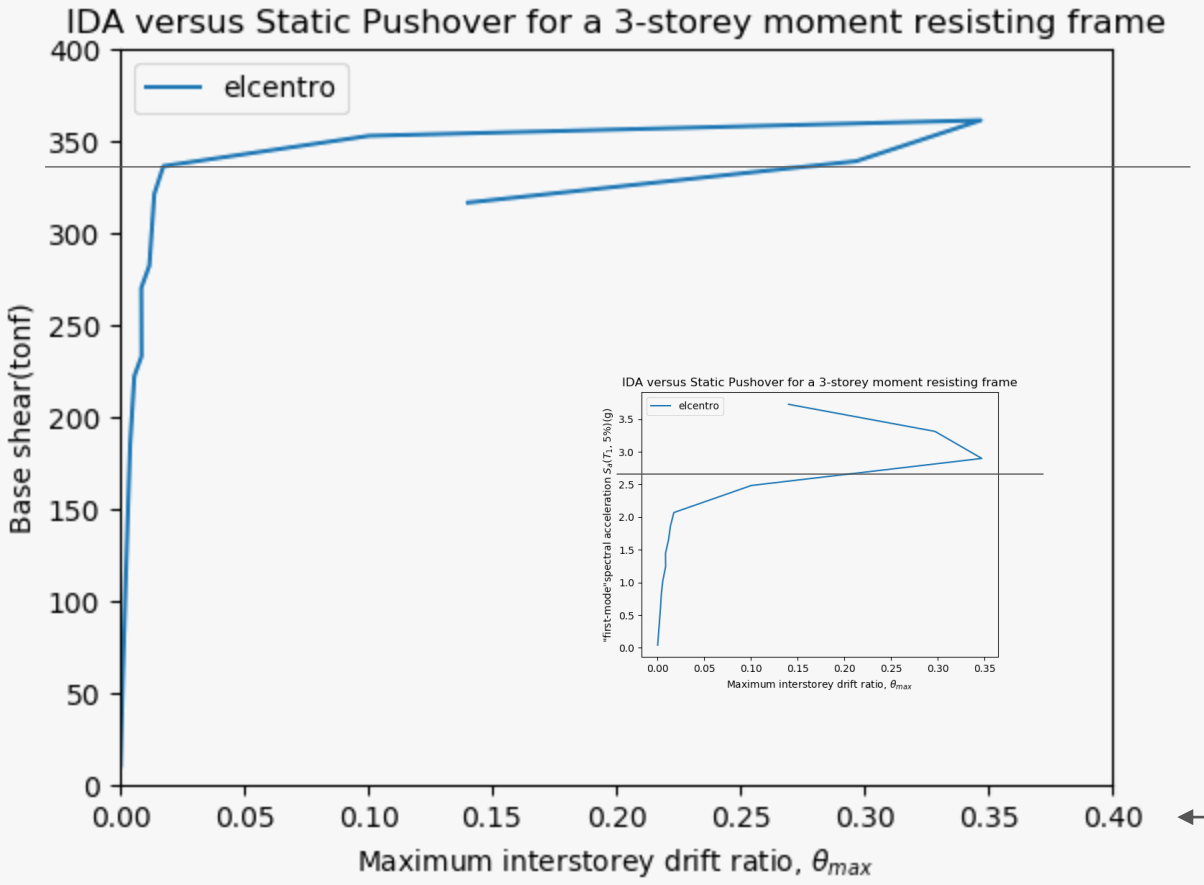


Another way IM: Base Shear





Problem: IM: Base Shear



Scaled Factor ↑ ➔ Base Shear ↓

Without Median or Mean Curve

Base Shear May be Damage Measure (DM)

← Scale Bigger than Former

FEMA

Linear Static Procedure

Linear Dynamic Procedure

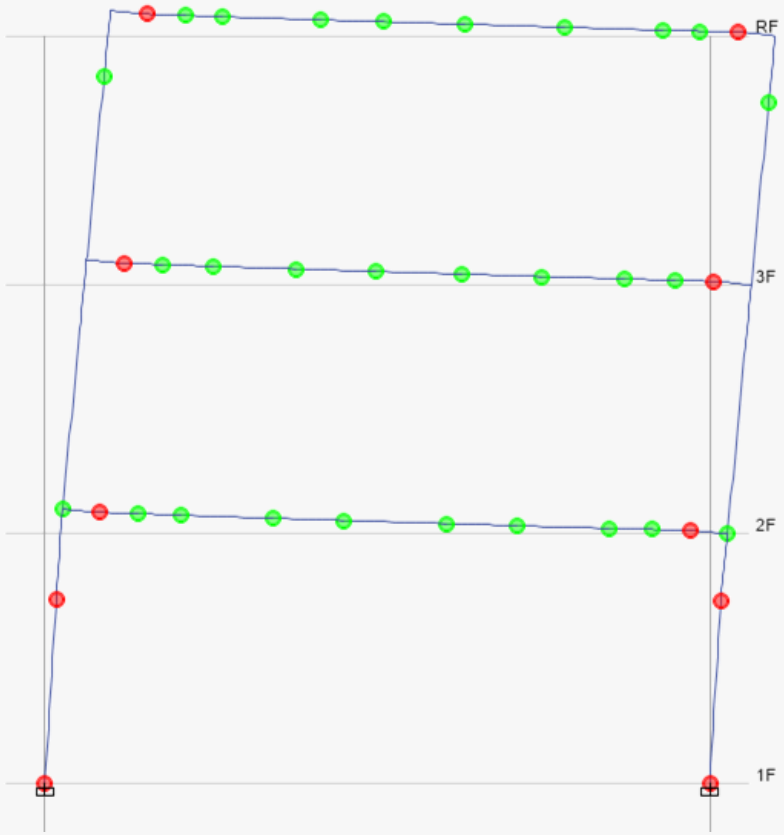
Nonlinear Static Procedure

Nonlinear Dynamic Procedure

In Design and Maximum Earthquake

Problem: Without Middle Hinge

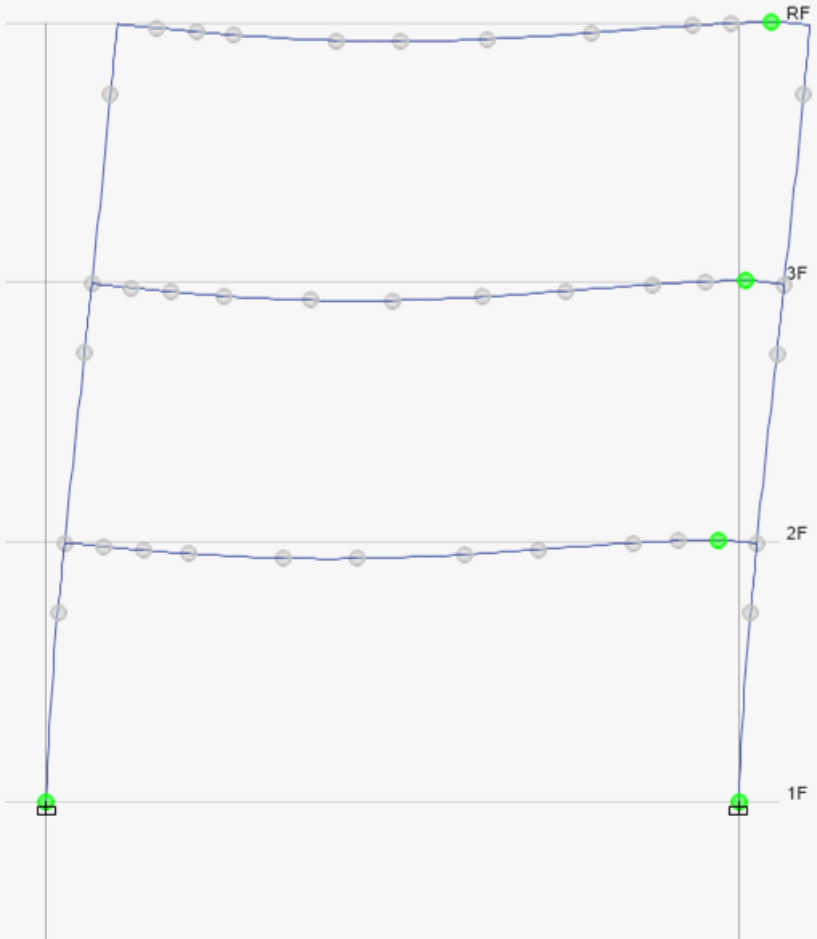
Time History



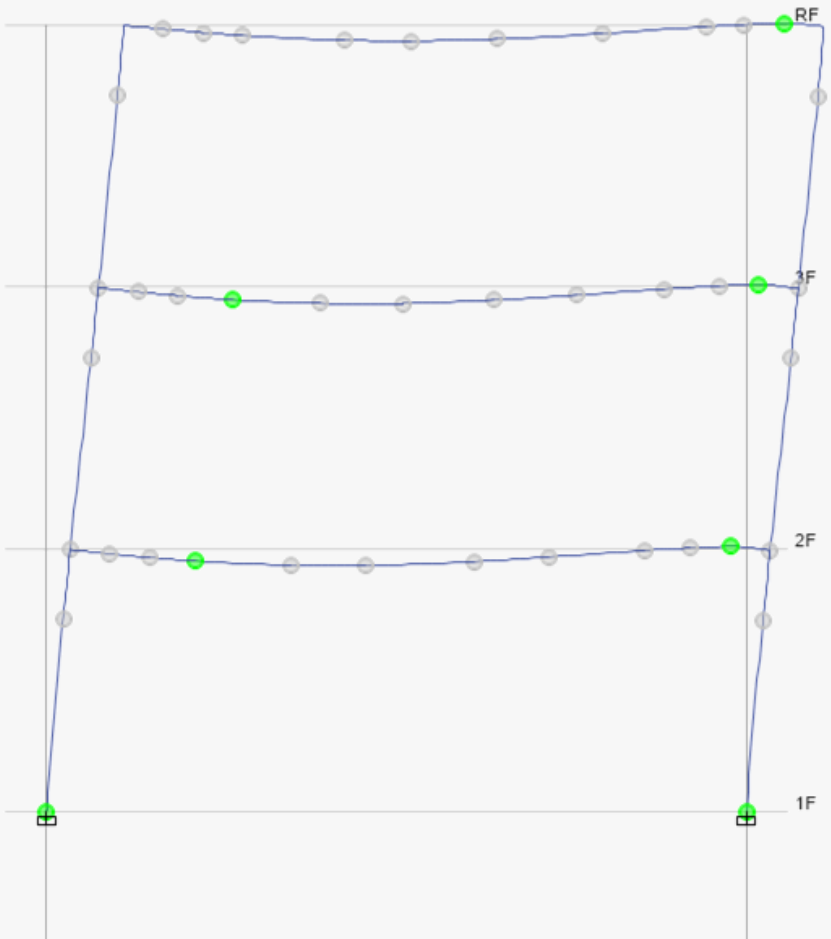
Pushover

FEMA: NSP

Design

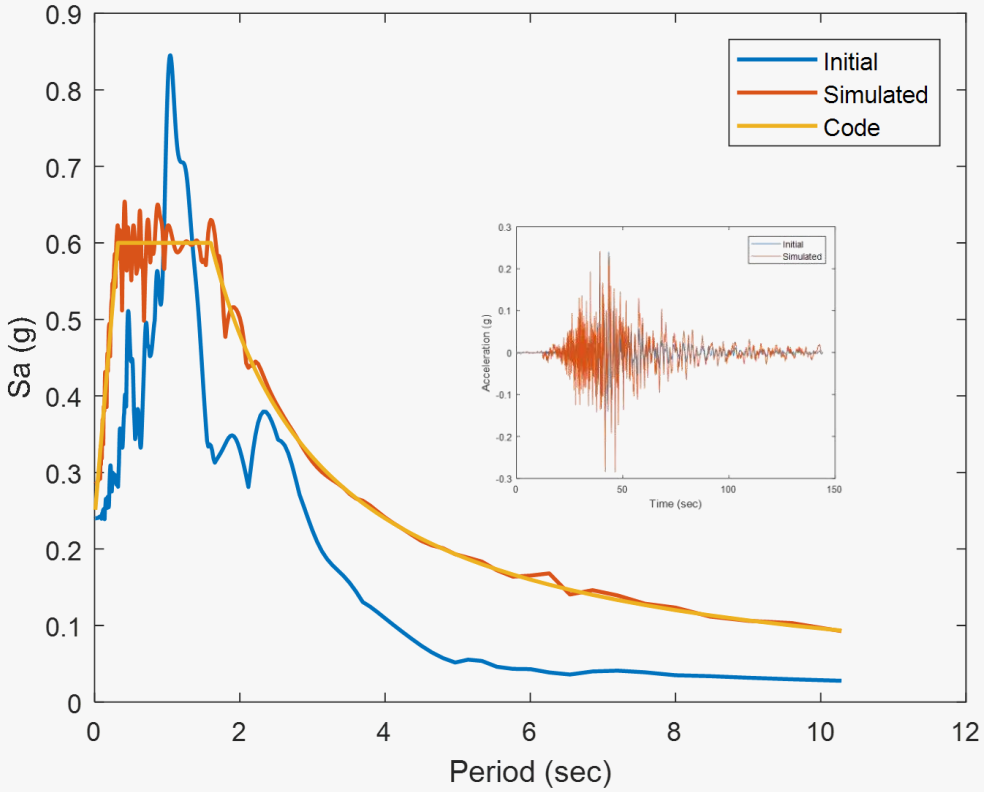


Maximum

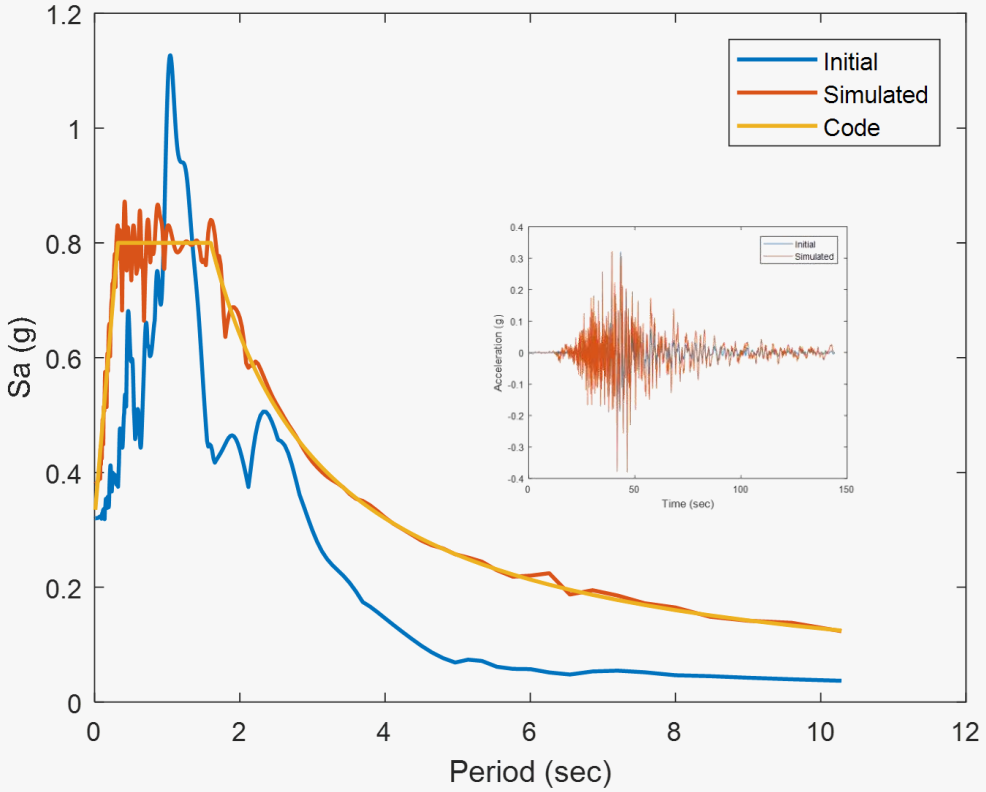


Artificial Time History - TAP010

Design Spectrum

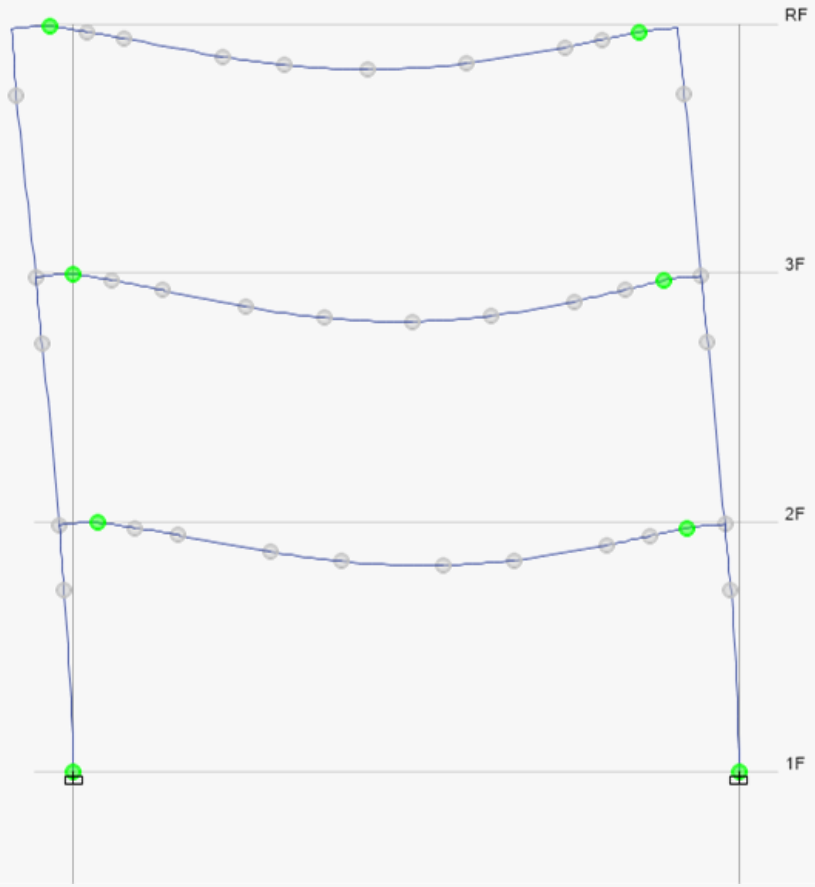


Maximum Spectrum

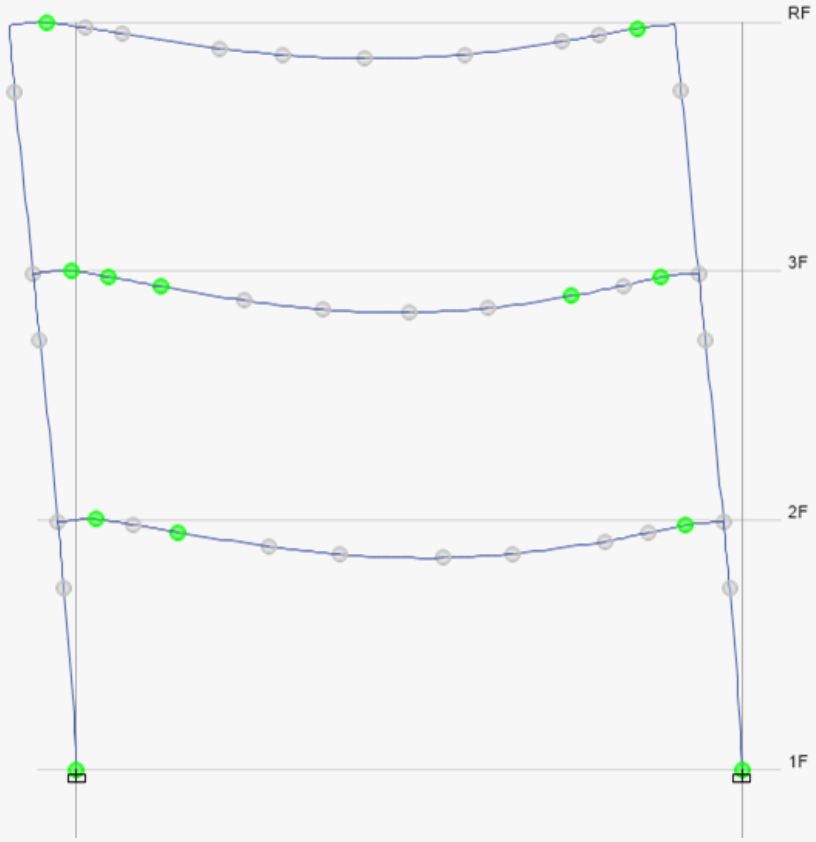


Artificial Time History - TAP010

Design

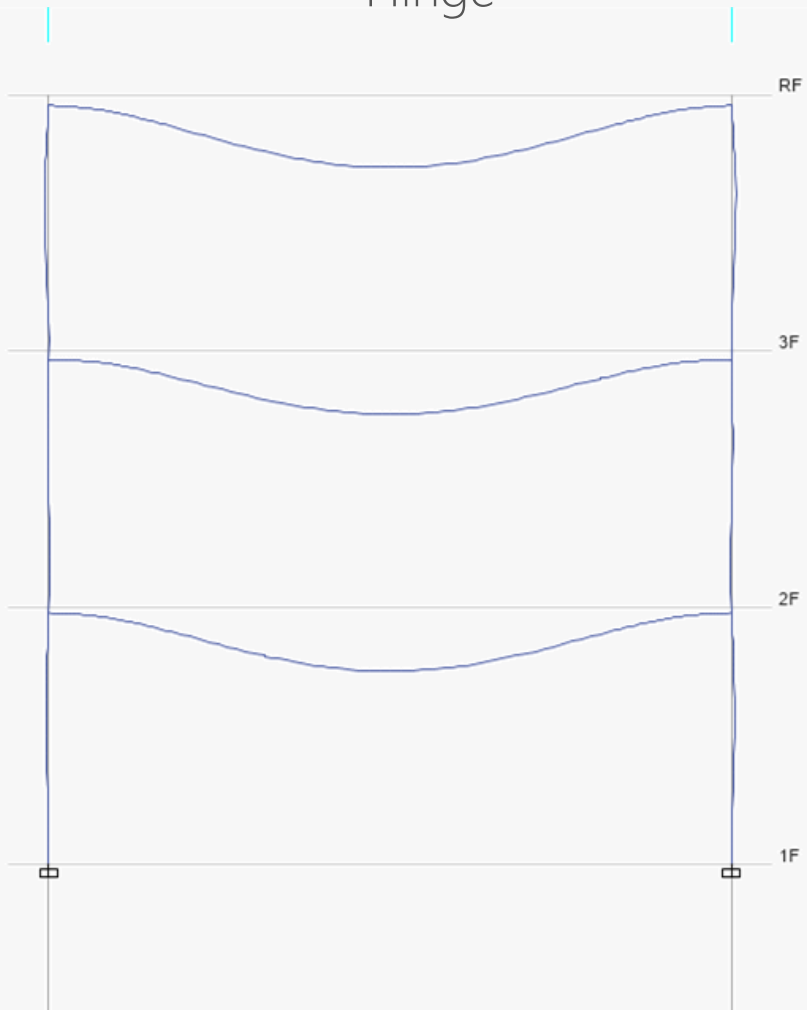


Maximum

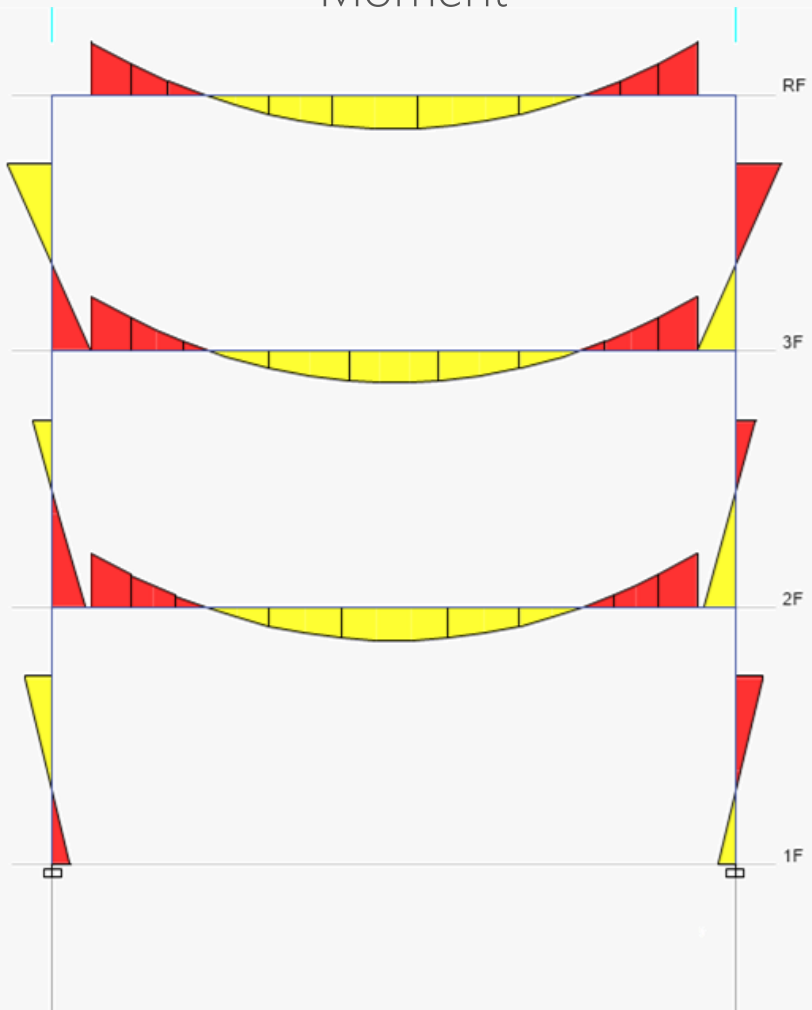


Pushover 0 Step

Hinge

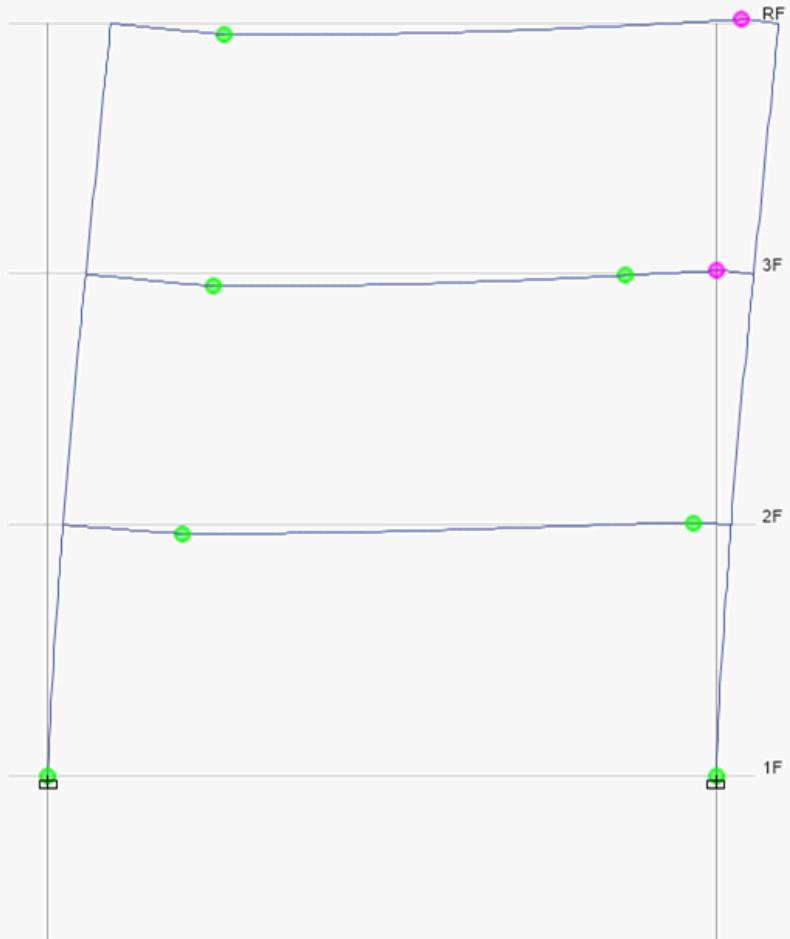


Moment

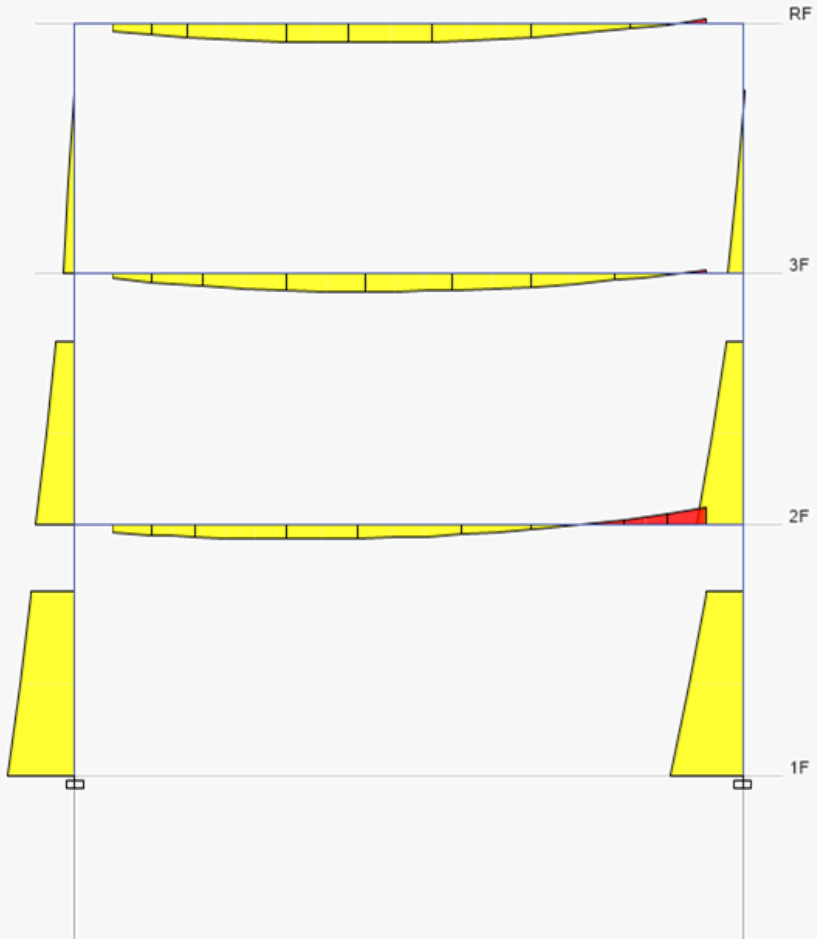


Pushover 13 Step

Hinge

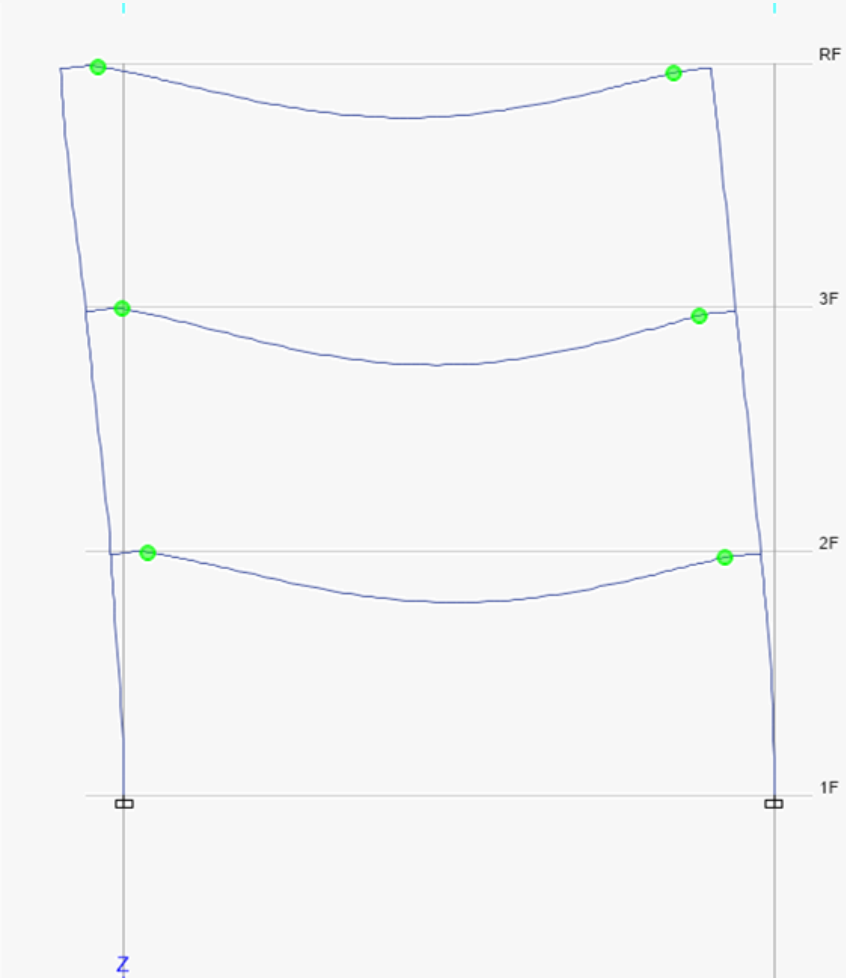


Moment

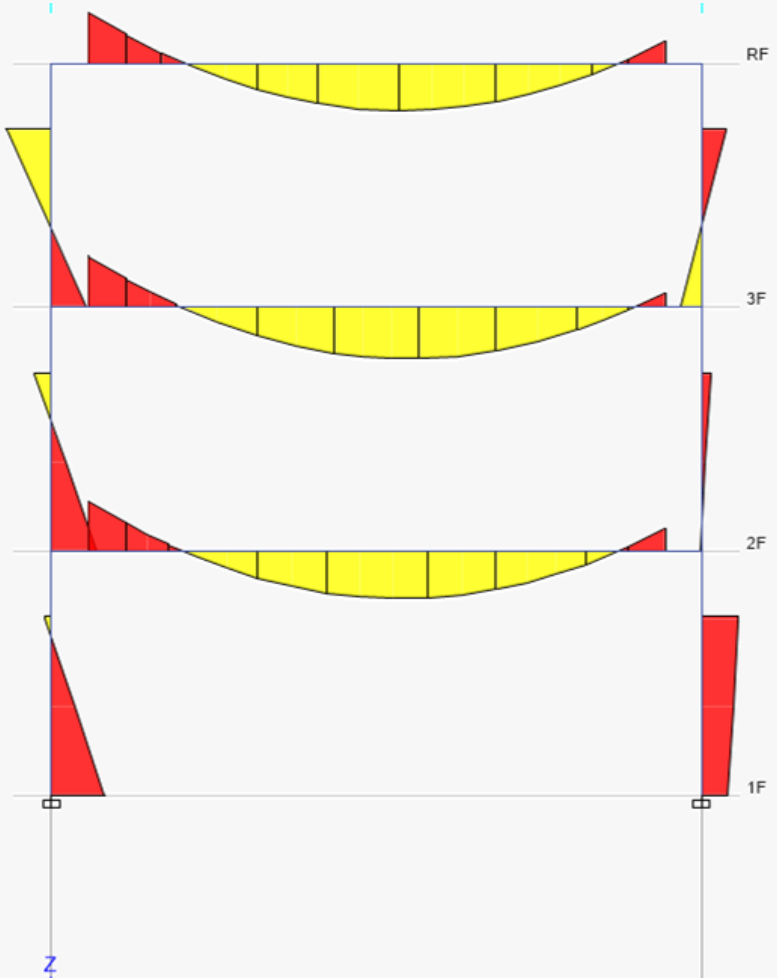


Time History 30s

Hinge

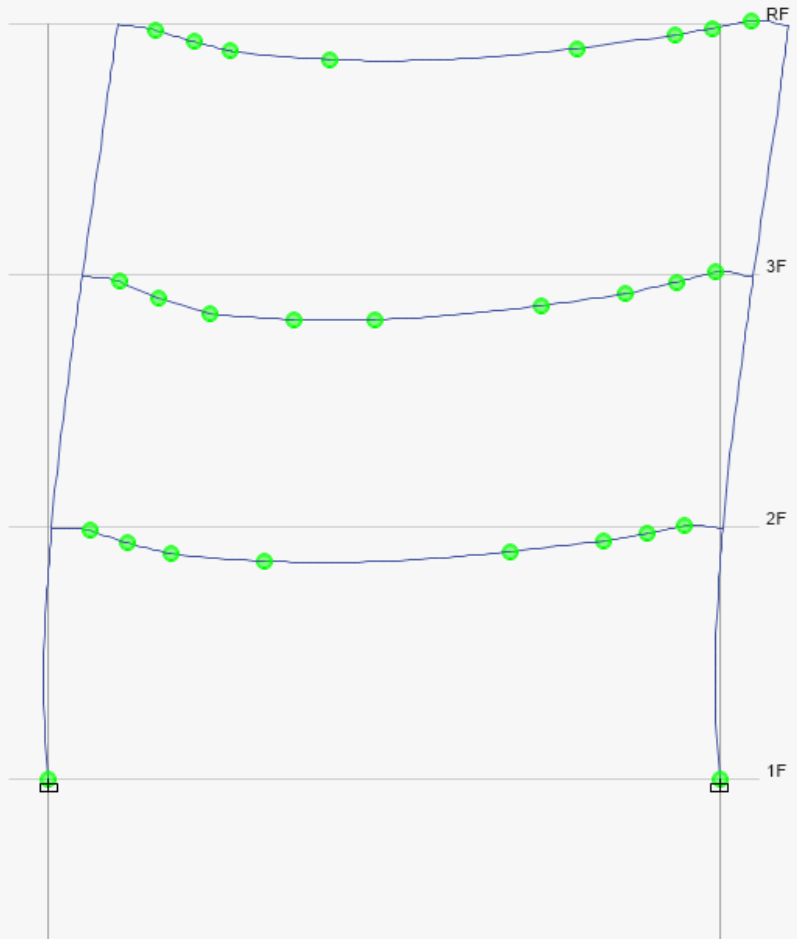


Moment

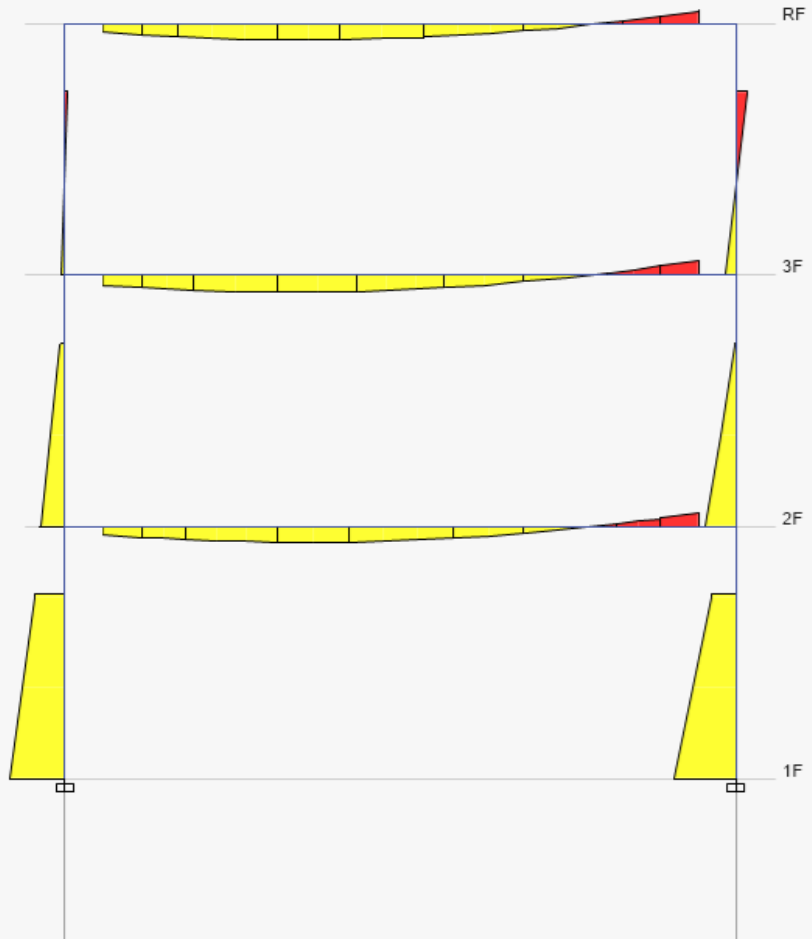


Time History 40s

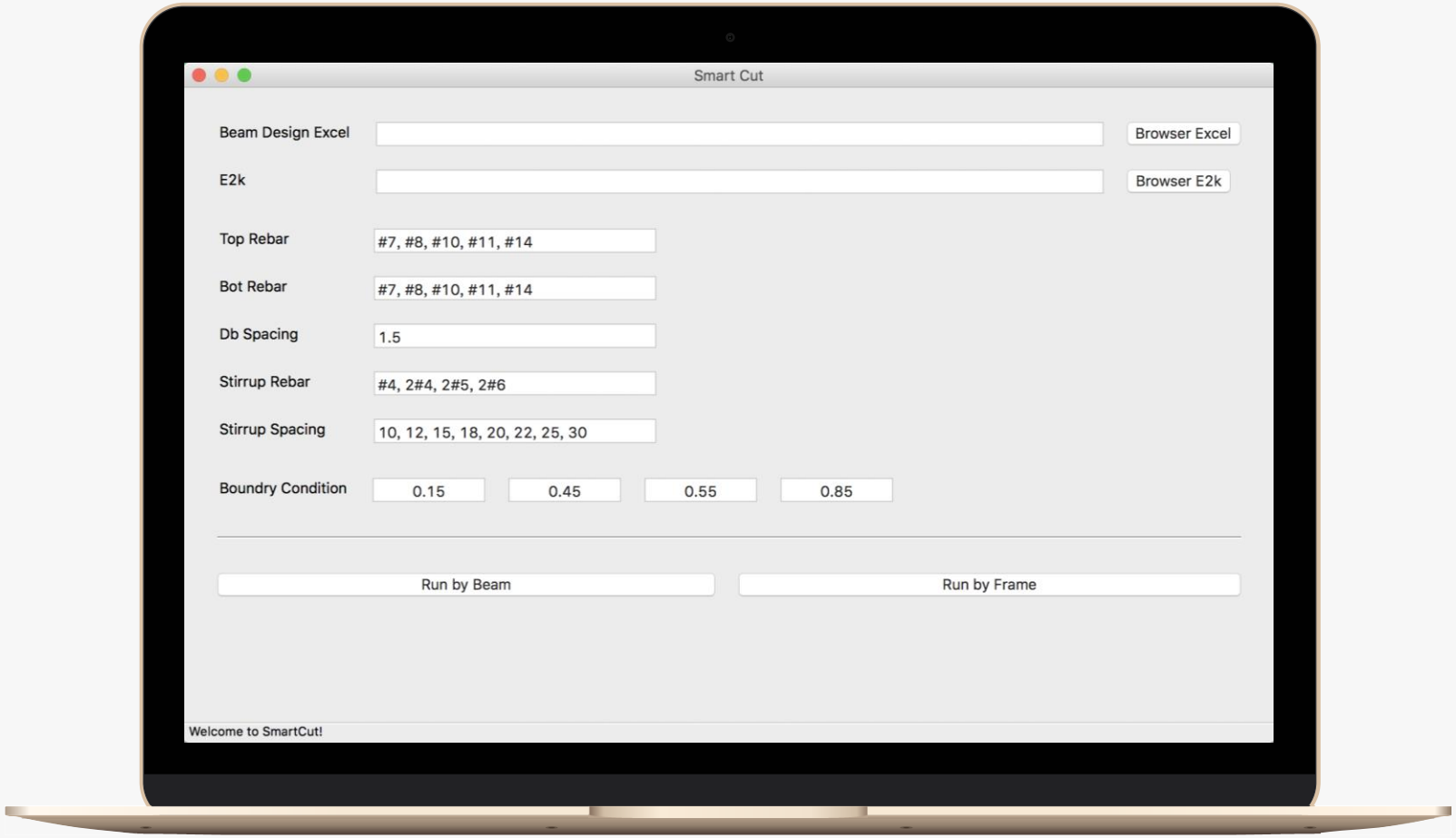
Hinge

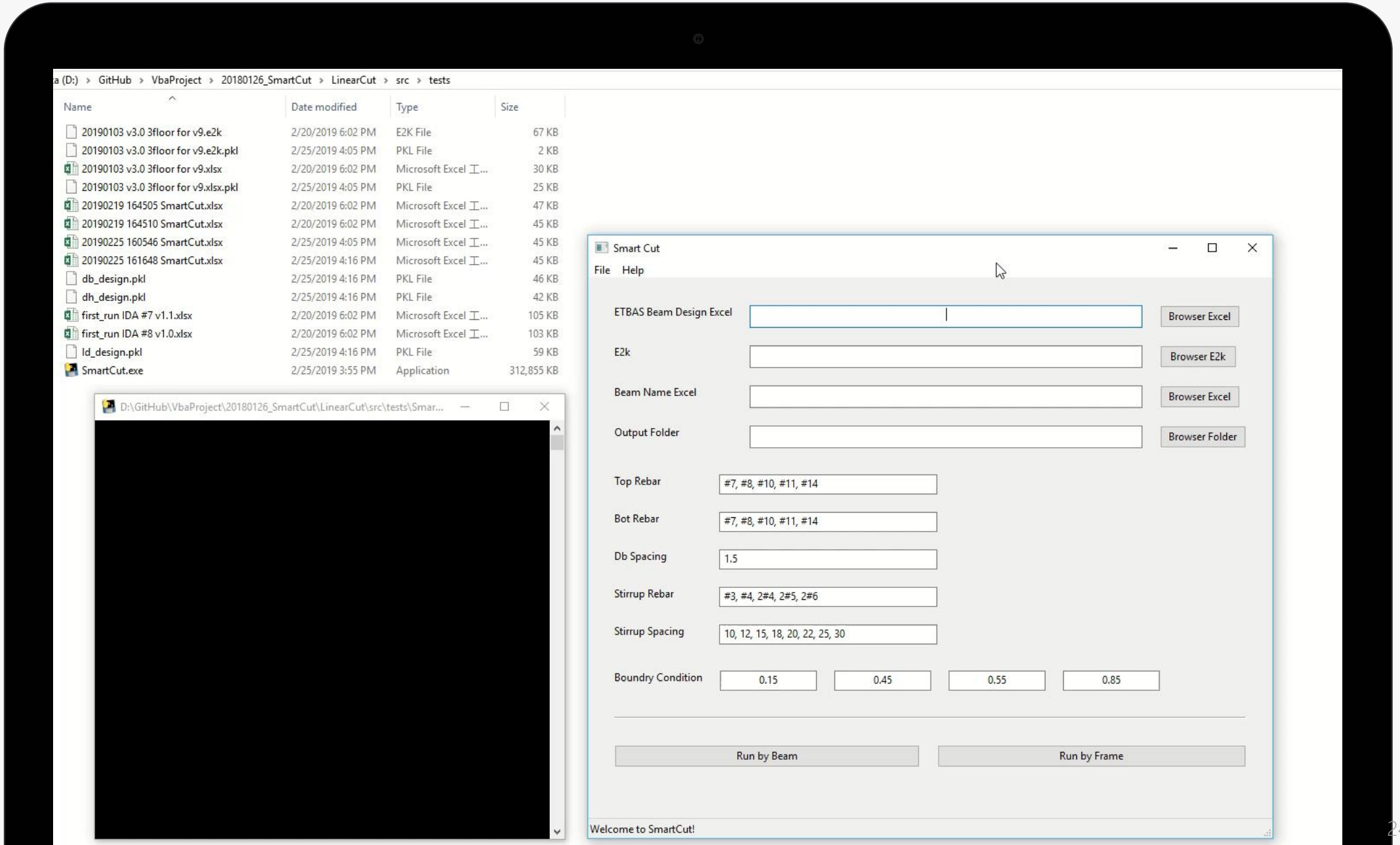


Moment



LinearCut
GUI

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File Help
ETBAS Beam Design Excel
Browser Excel
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Output Folder
Browser Folder
Top Rebar
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Bot Rebar
#7, #8, #10, #11, #14
Db Spacing
1.5
Stirrup Rebar
#3, #4, 2#4, 2#5, 2#6
Stirrup Spacing
10, 12, 15, 18, 20, 22, 25, 30
Boundry Condition
0.15
0.45
0.55
0.85
Run by Beam
Run by Frame
Welcome to SmartCut!

Roadmap

Nonlinear Hinge Program: To Use In Complex Structure

FEMA: To Verify IDA Result is Correct

Simulate Model: 2-D 3 story ➔ FEMA P695 Model? ➔ Actual Model (from corporation)