

# Finite Element Analysis of Radius and Ulna

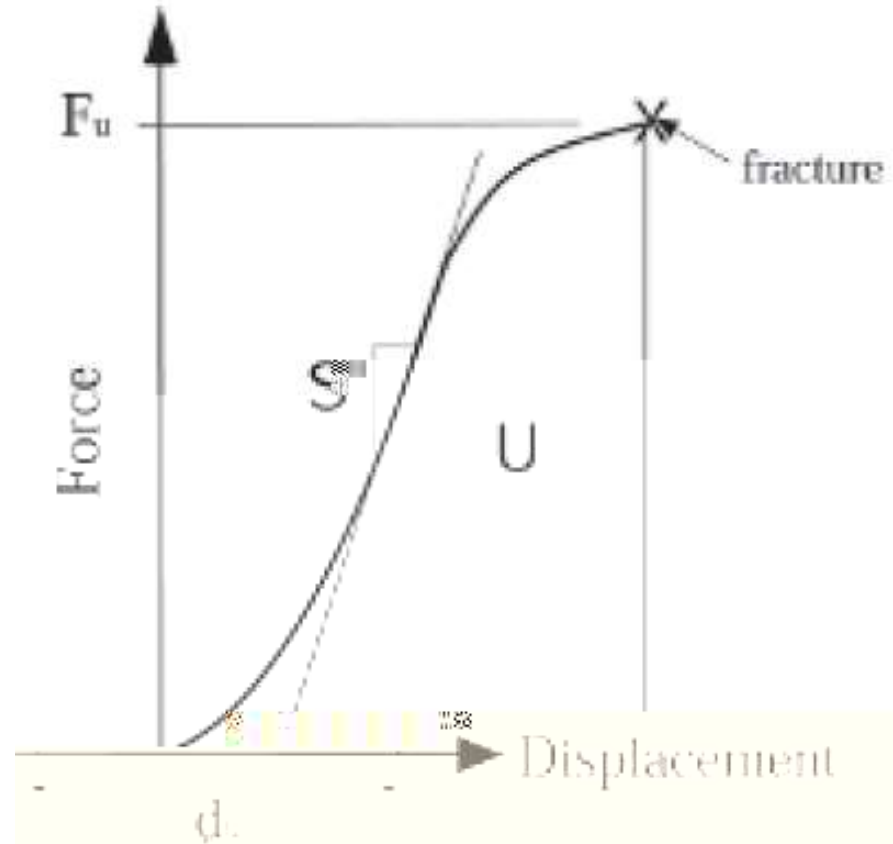


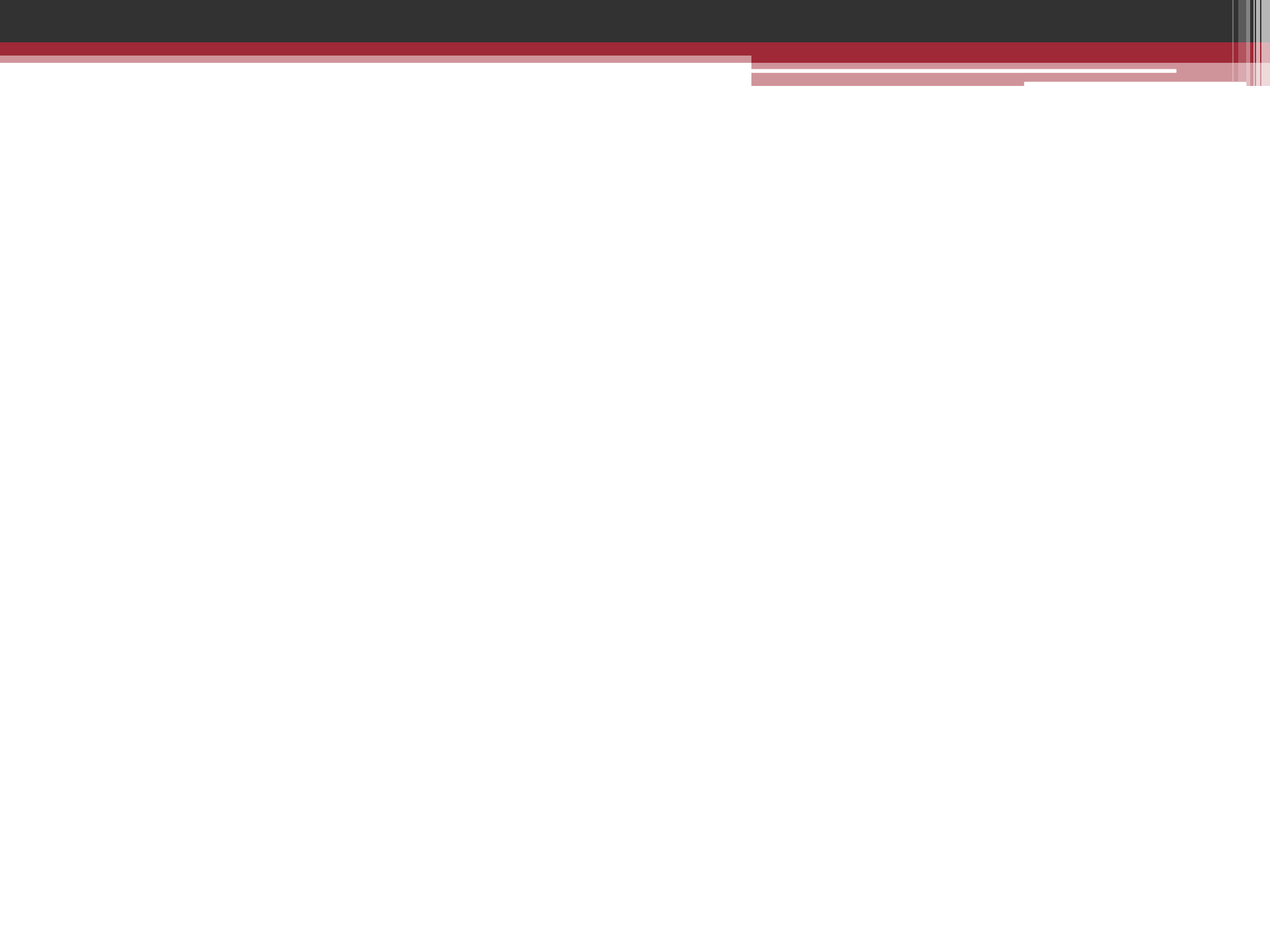


# Outline

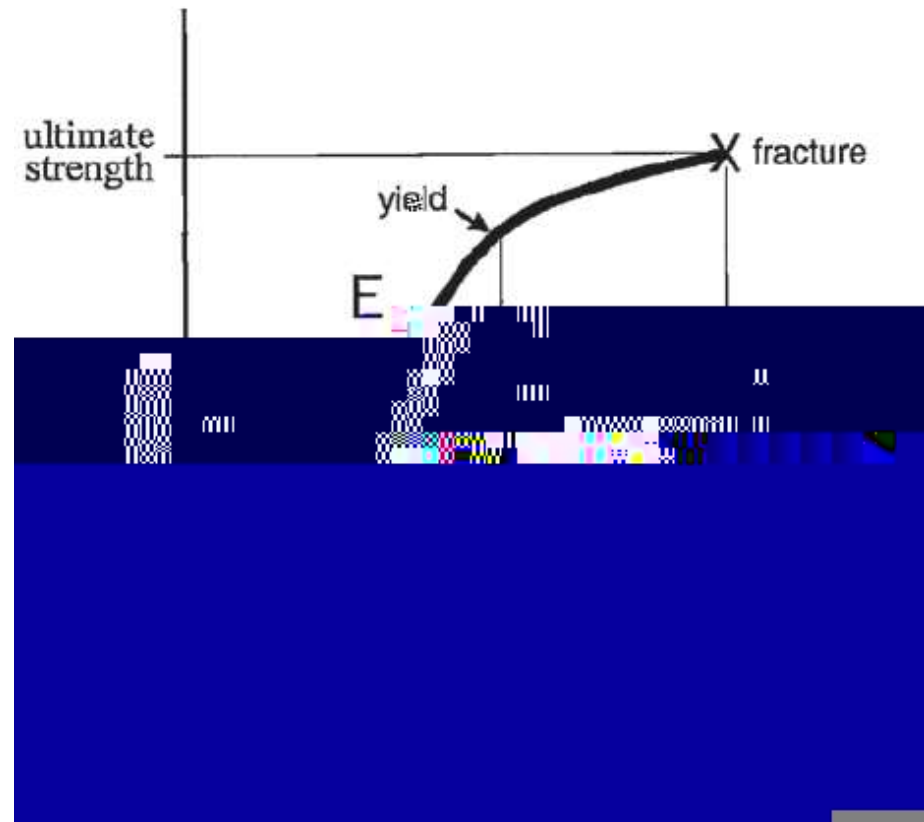
# Why Bones Break

$F_u$





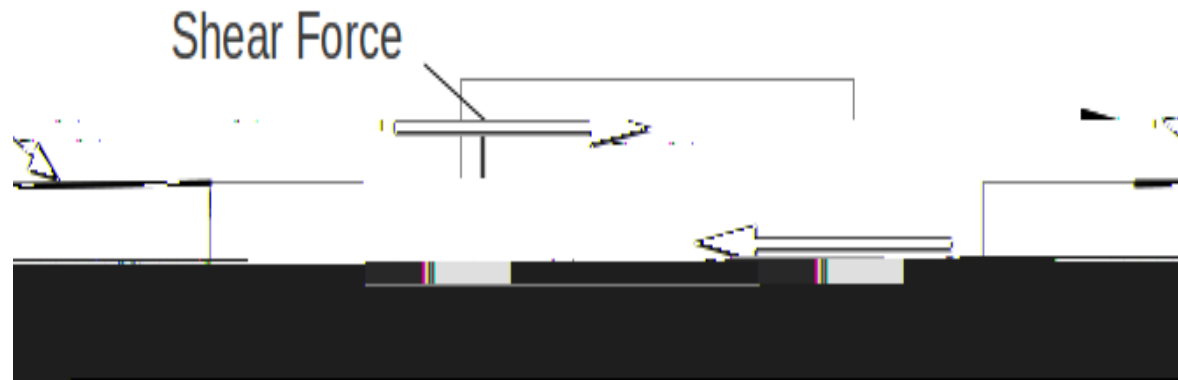
# Why Bones Break



# Analysis Concepts

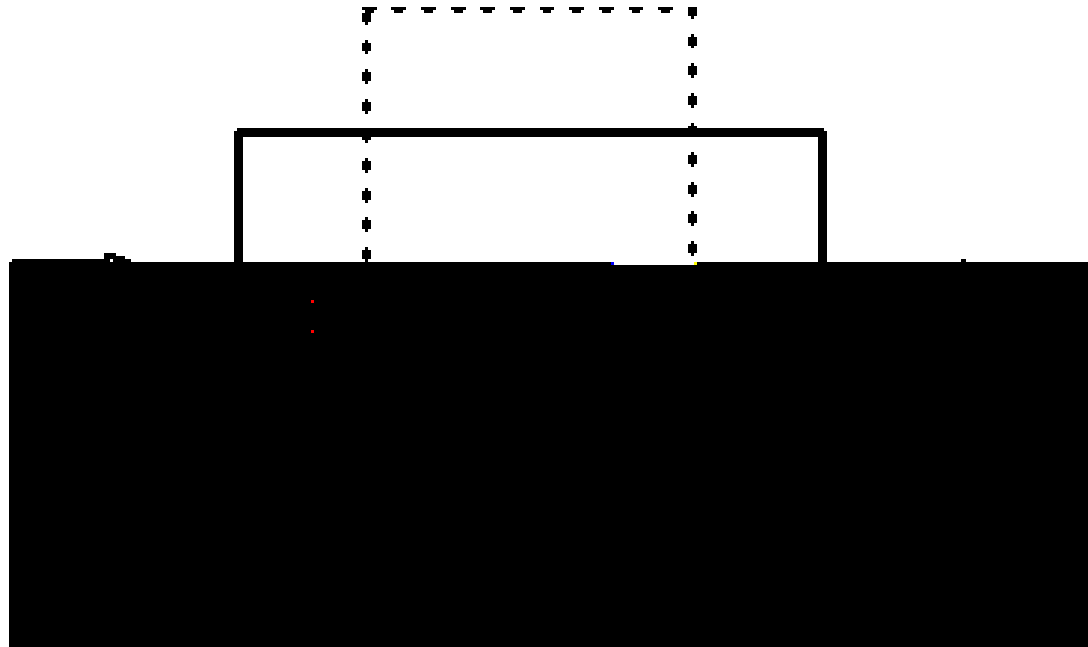
# Analysis Concepts

$$S = \frac{F_p/A}{\epsilon_s}$$

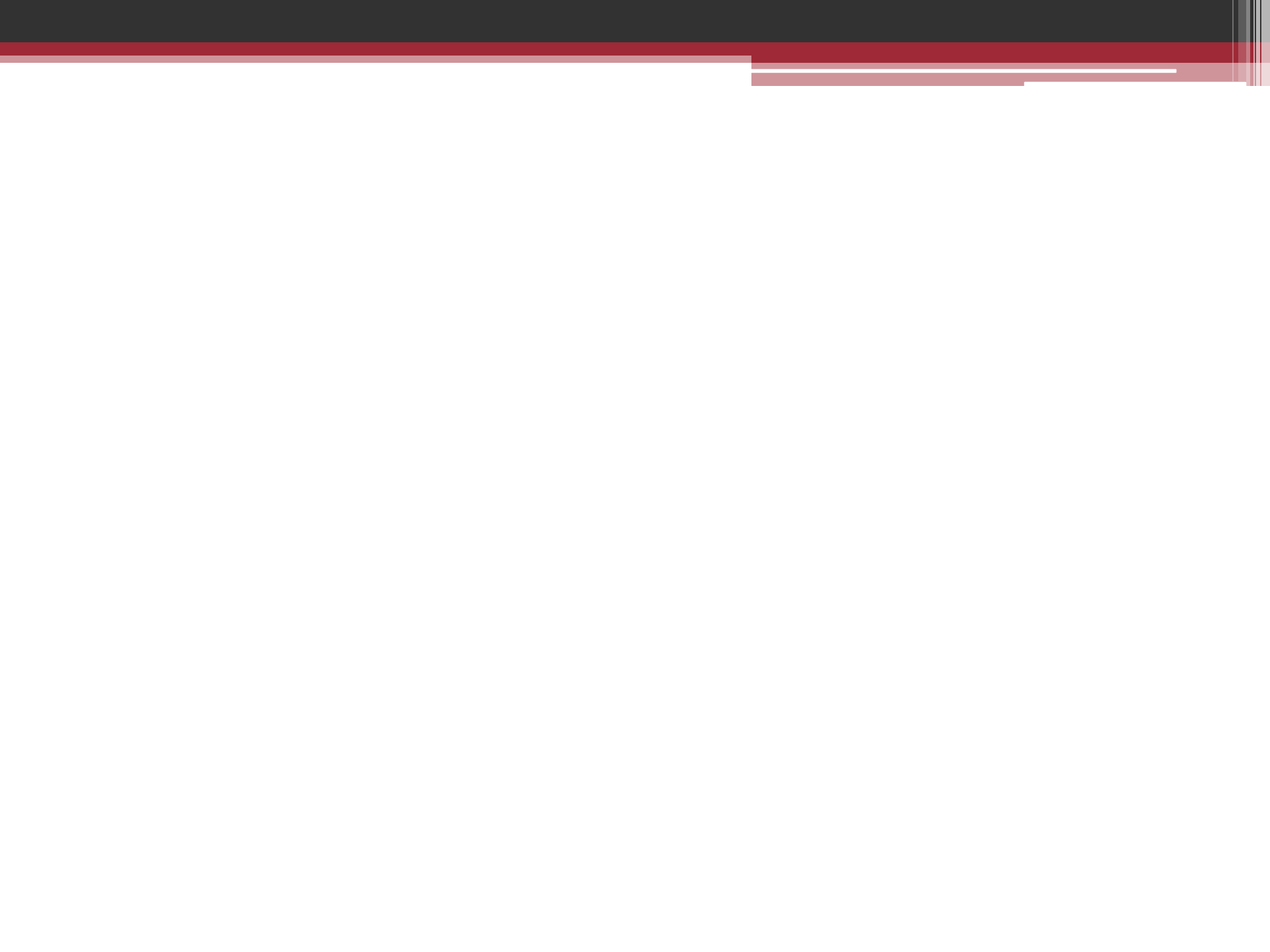


# Analysis Concepts

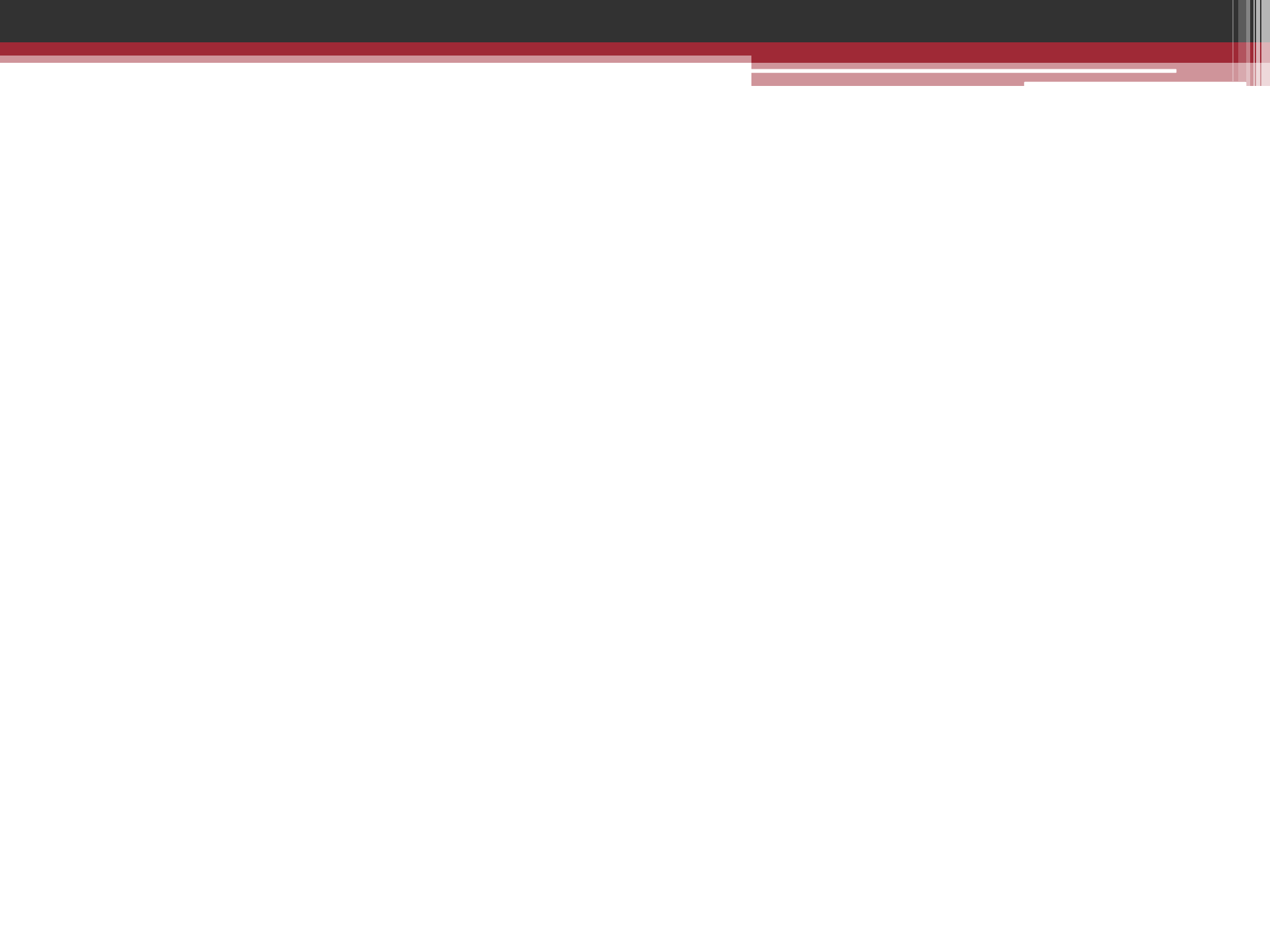
$$v = -\frac{\varepsilon_t}{\varepsilon_l}$$





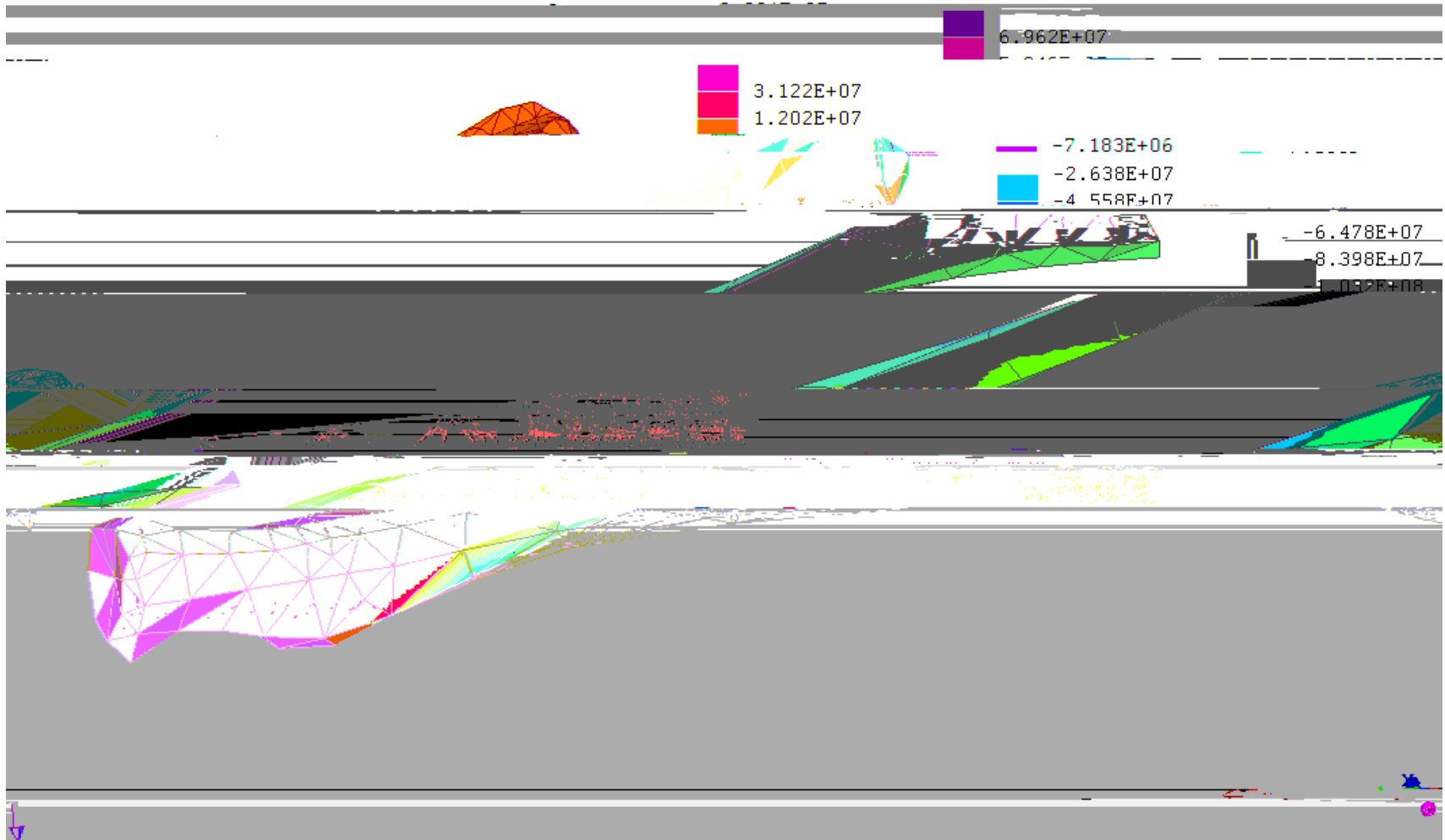


# Analysis Concepts



# Radius Catching Fall

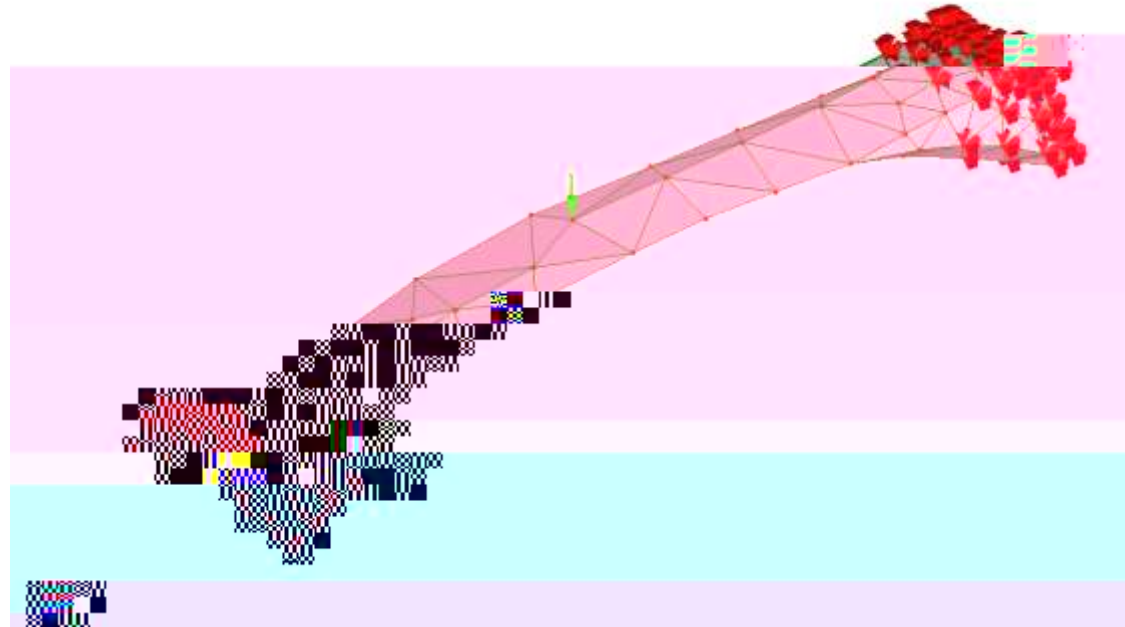
Stress ZZ



# Radius Catching Fall

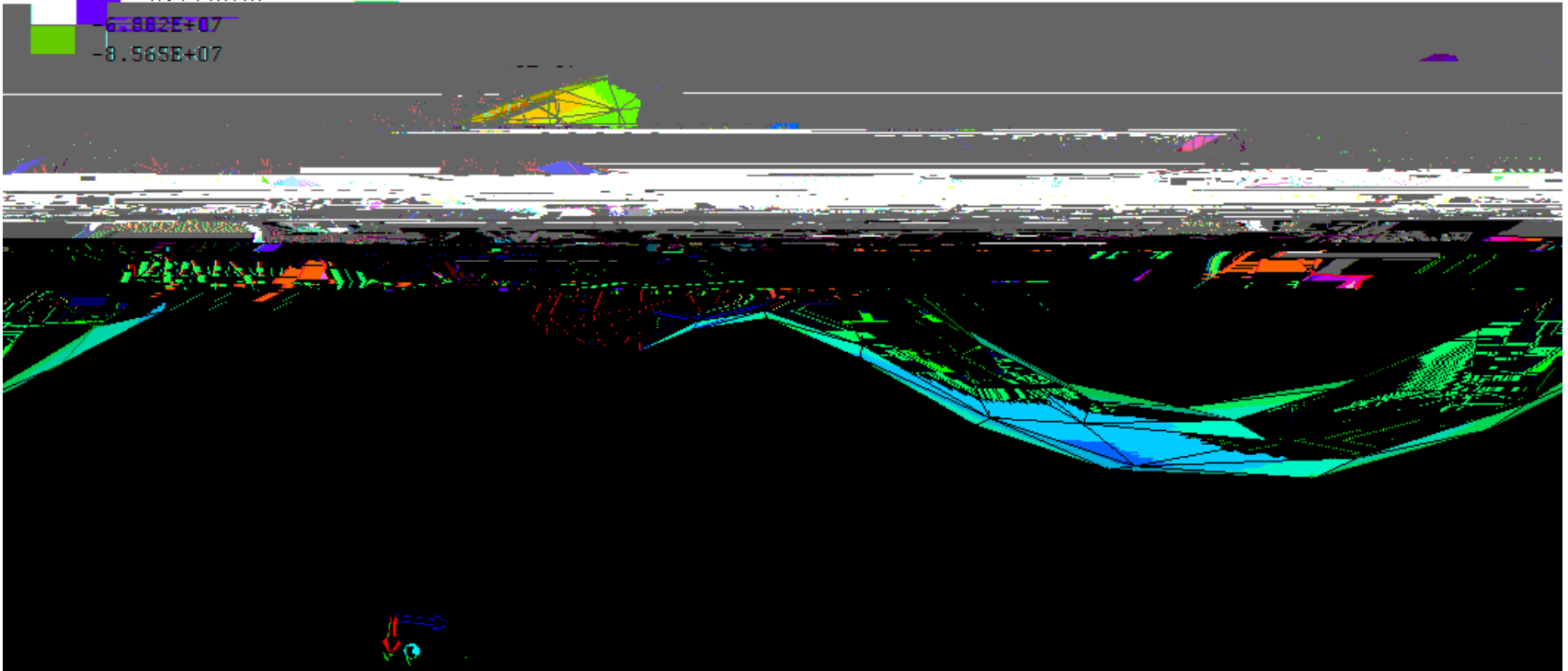
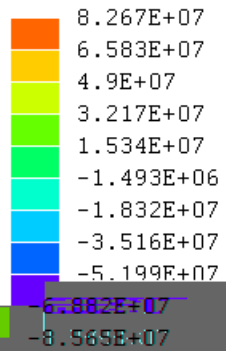


# Radius Middle Load



# Radius Middle Load

Stress ZZ



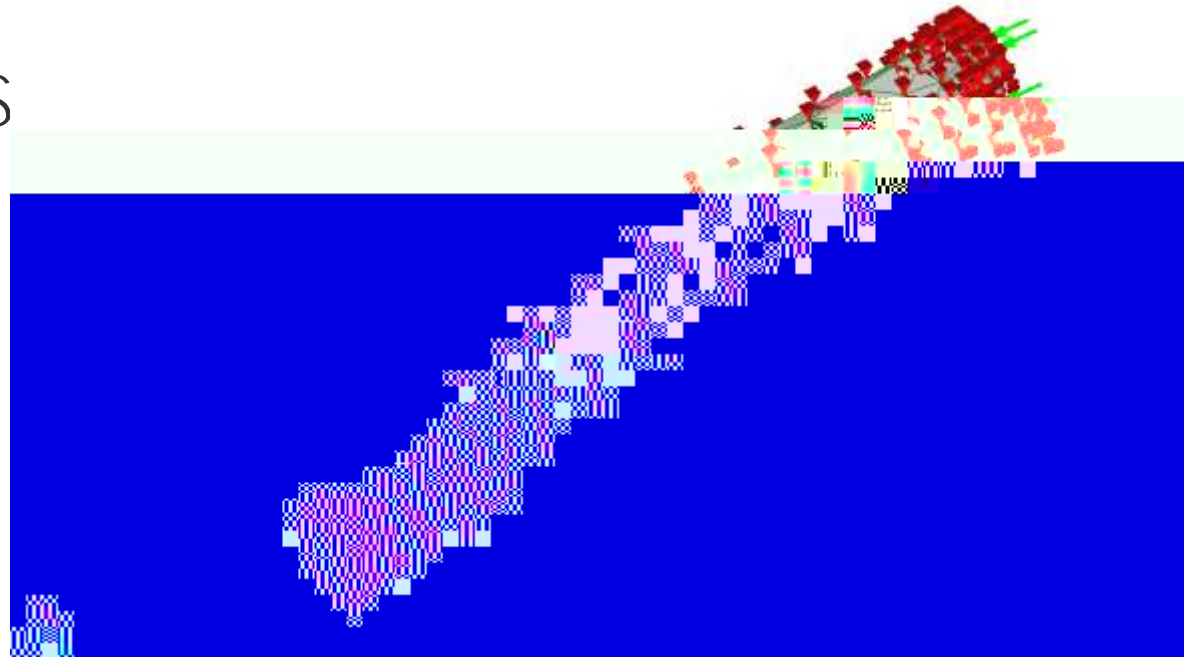


# Radius Middle Load

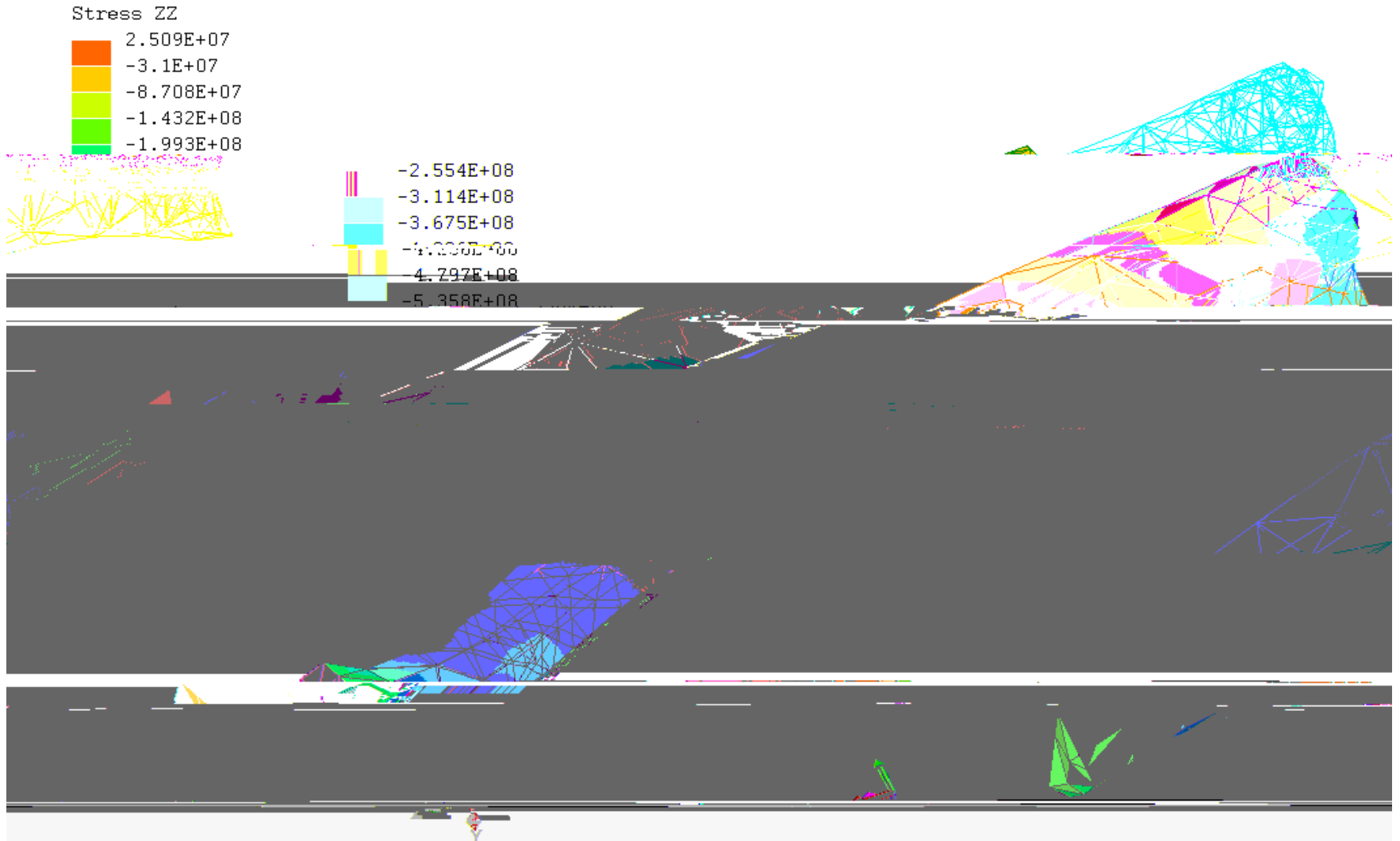
# Ulna Middle Load



Radius  
Compress Ends

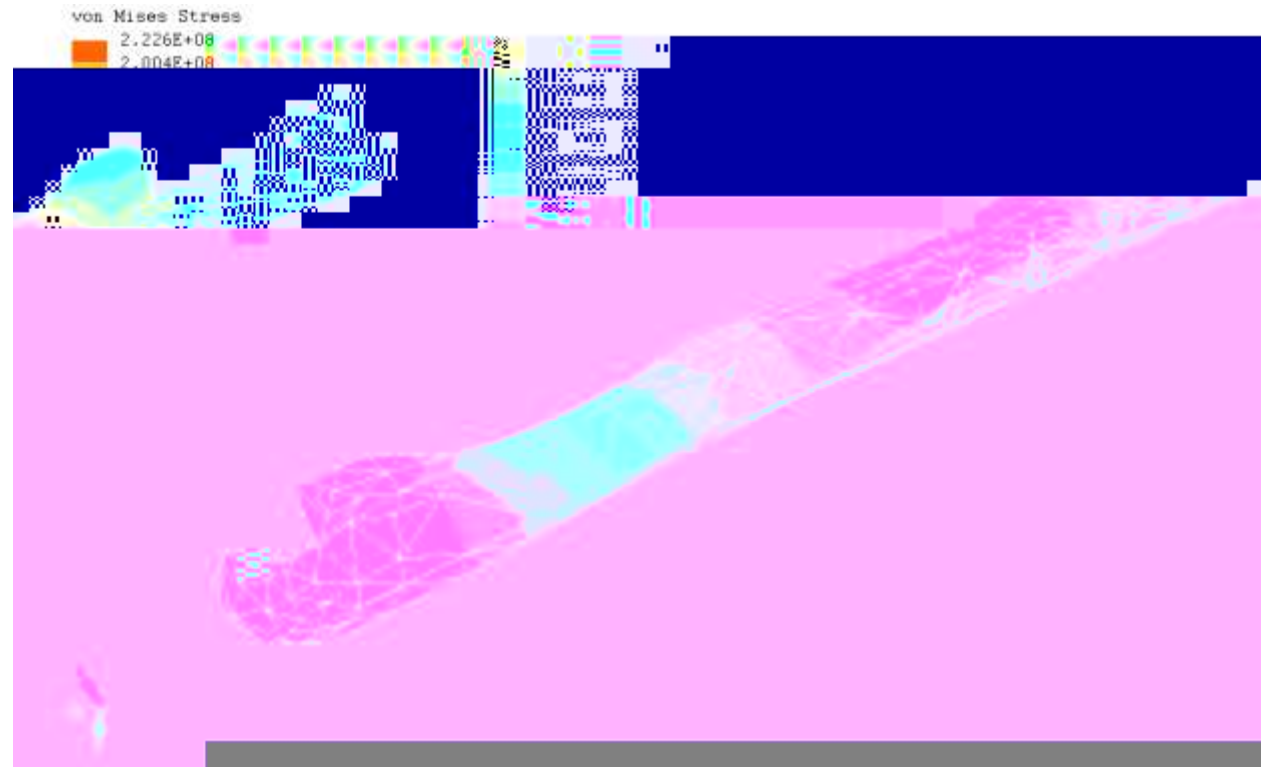


# Radius Compress Ends

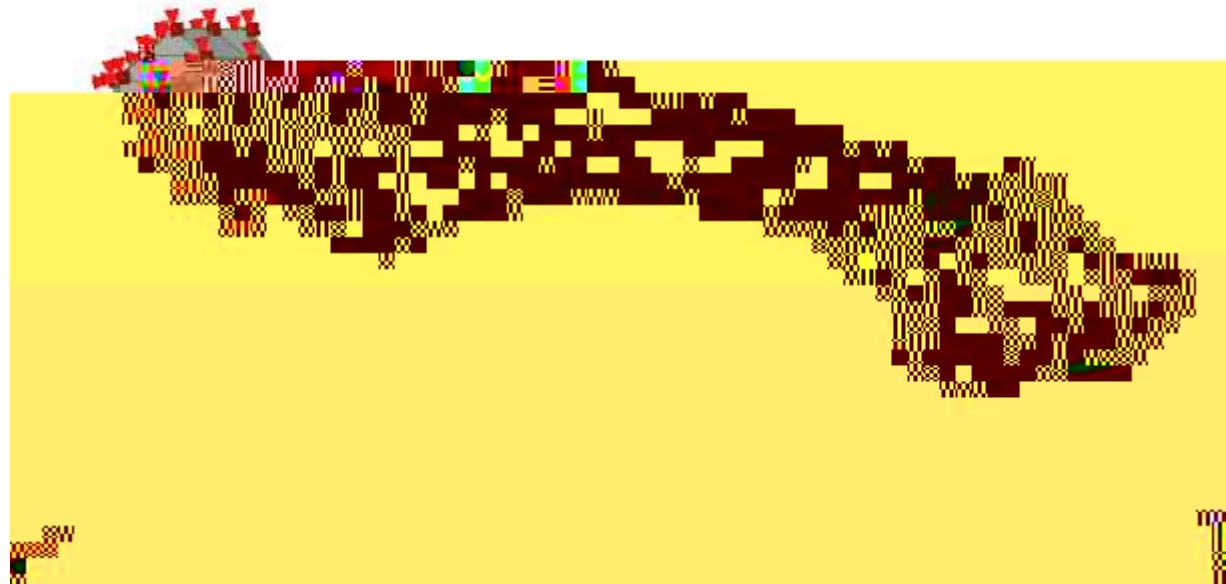




# Ulna Compress Ends



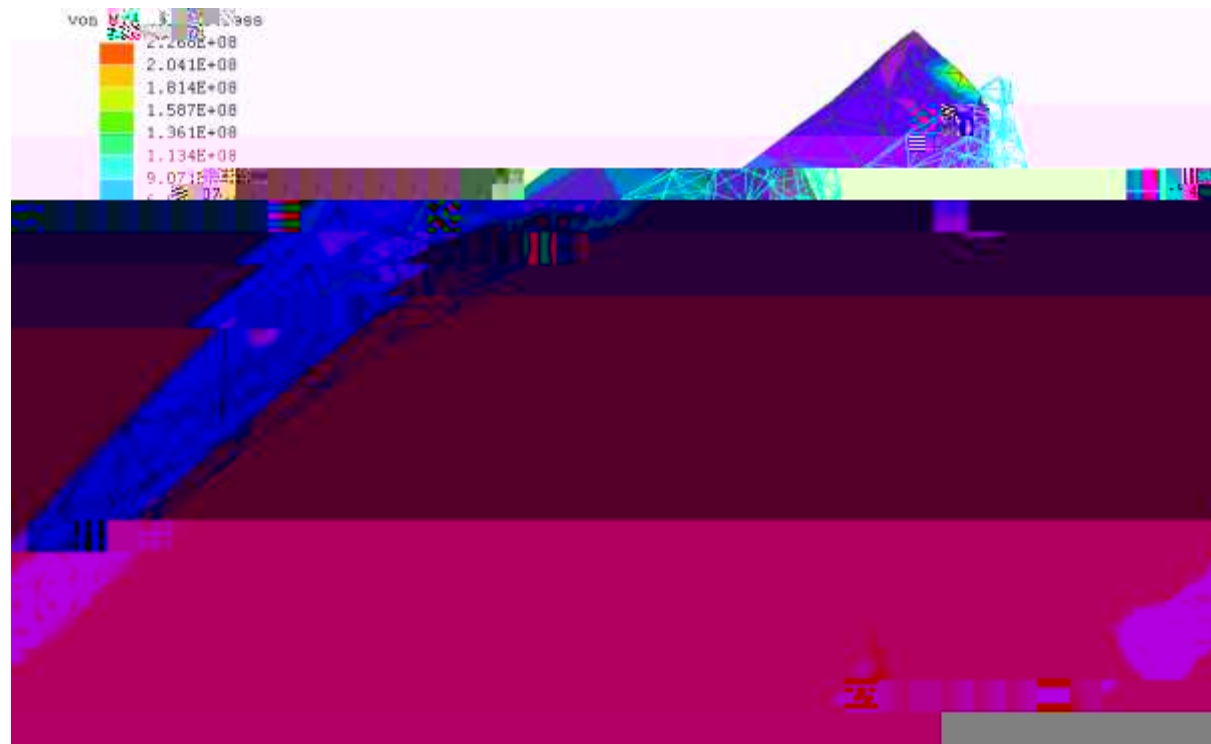
# Radius Twist







# Radius Twist

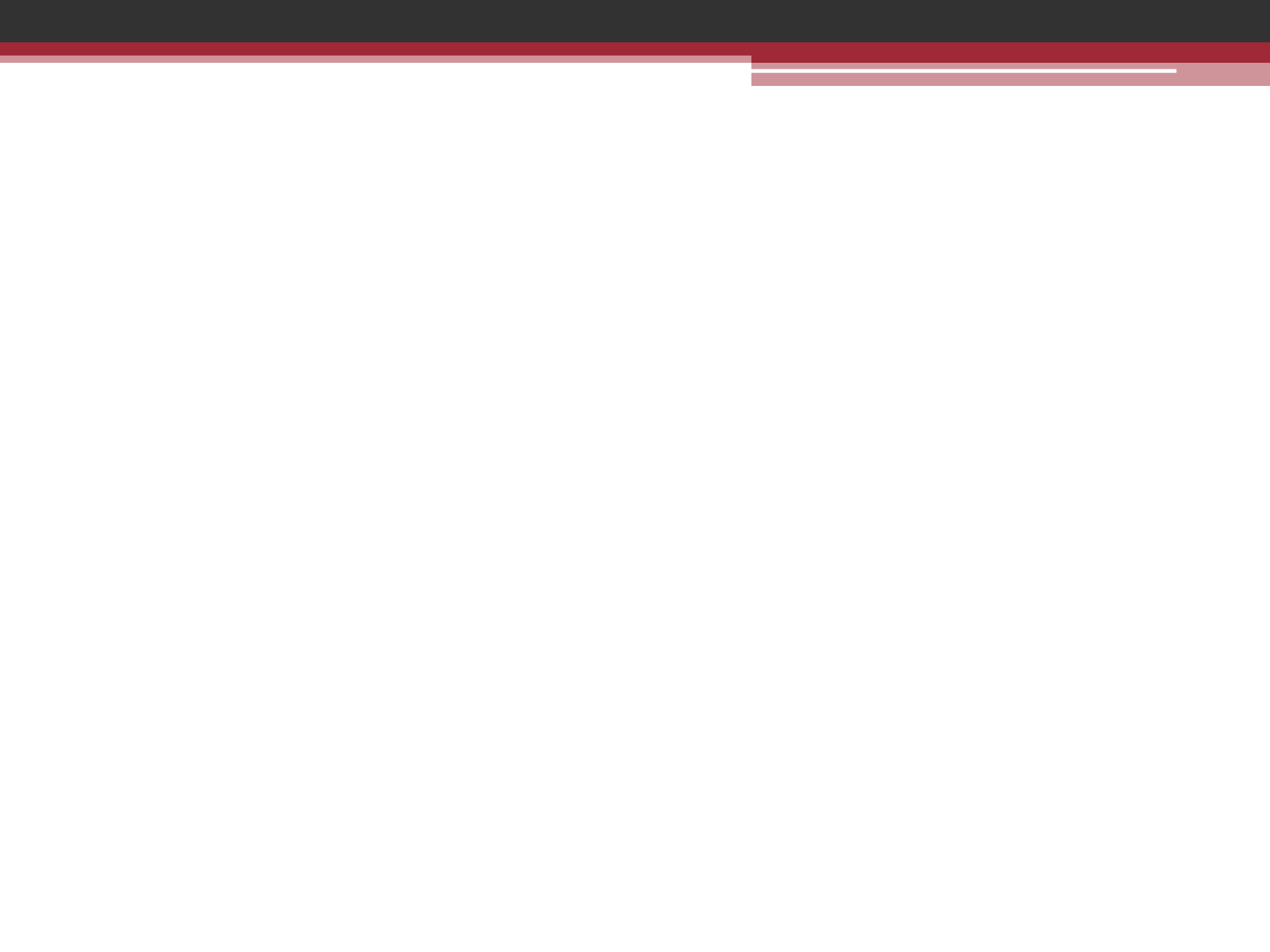


# Ulna Twist



# Summary of Forces

	Radius	Ulna
Catching Fall	1,160 N	1,610 N
Mid	4,720 N	7,450 N
Comp	34,200 N	40,200 N
Stretch	23,895 N	28,100 N
Twist	54.66 N·m	78.59 N·m





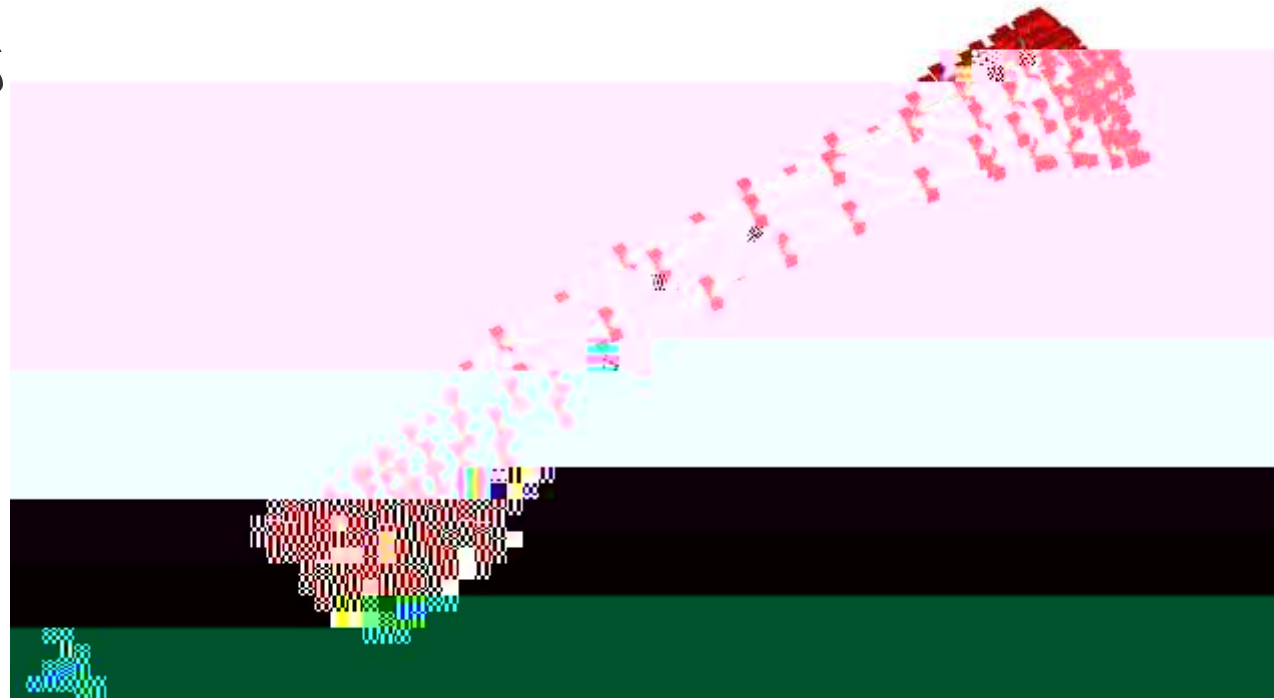
Thank You



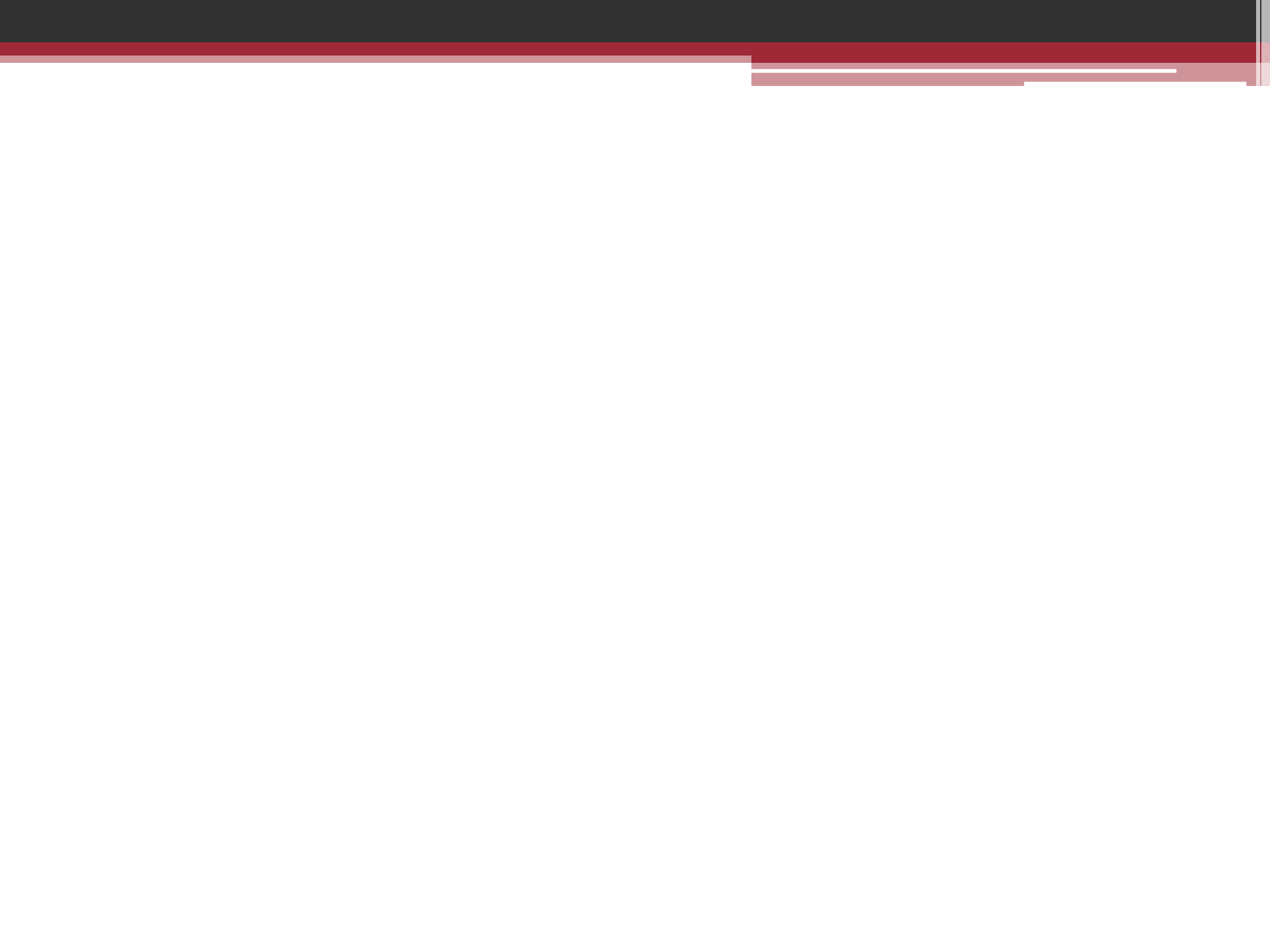


Questions?

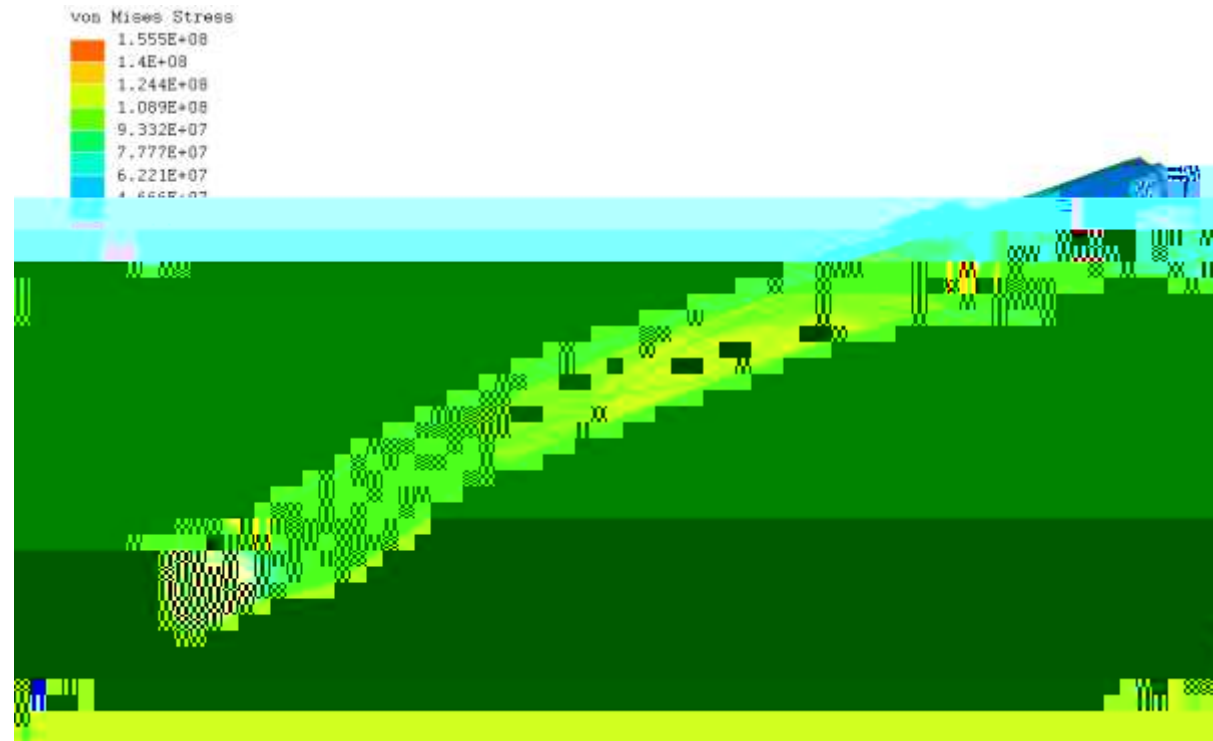
# Radius Stretch Ends







# Radius Stretch Ends

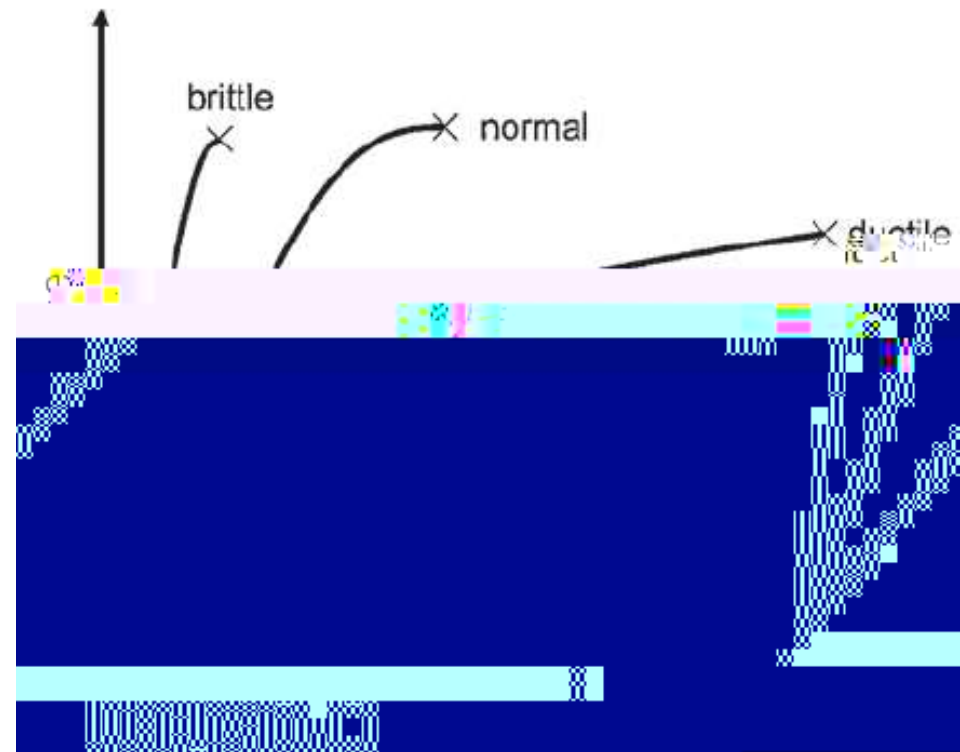




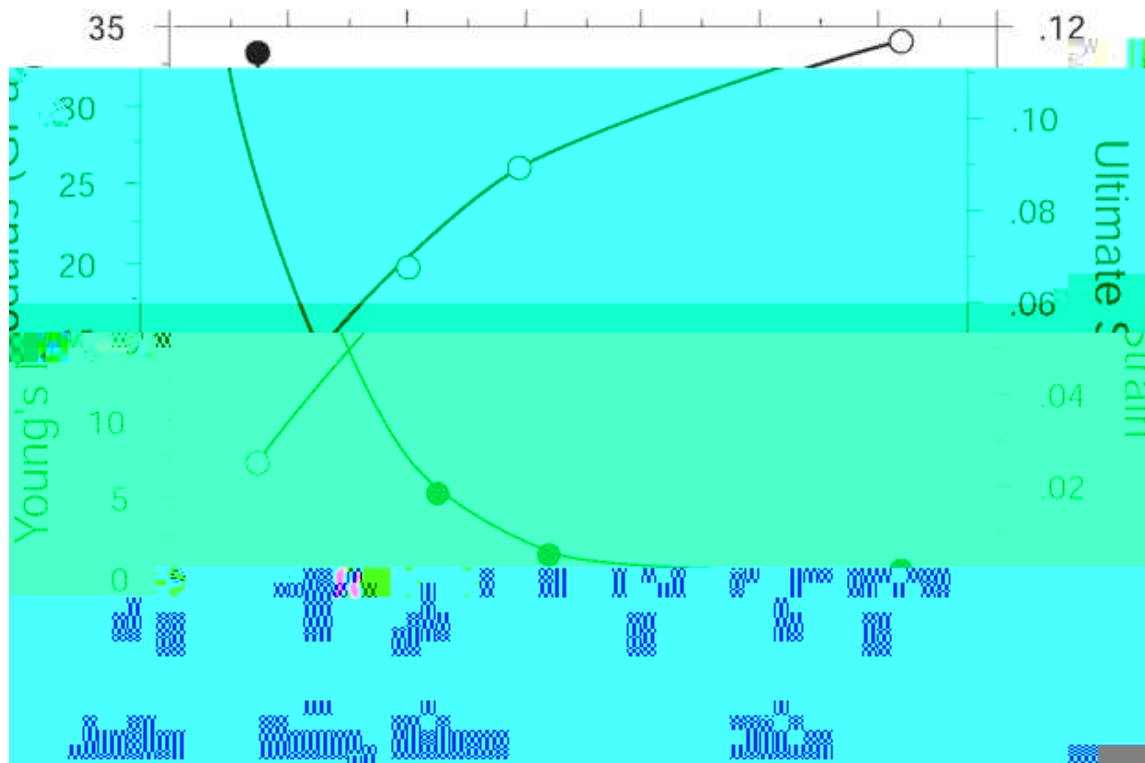


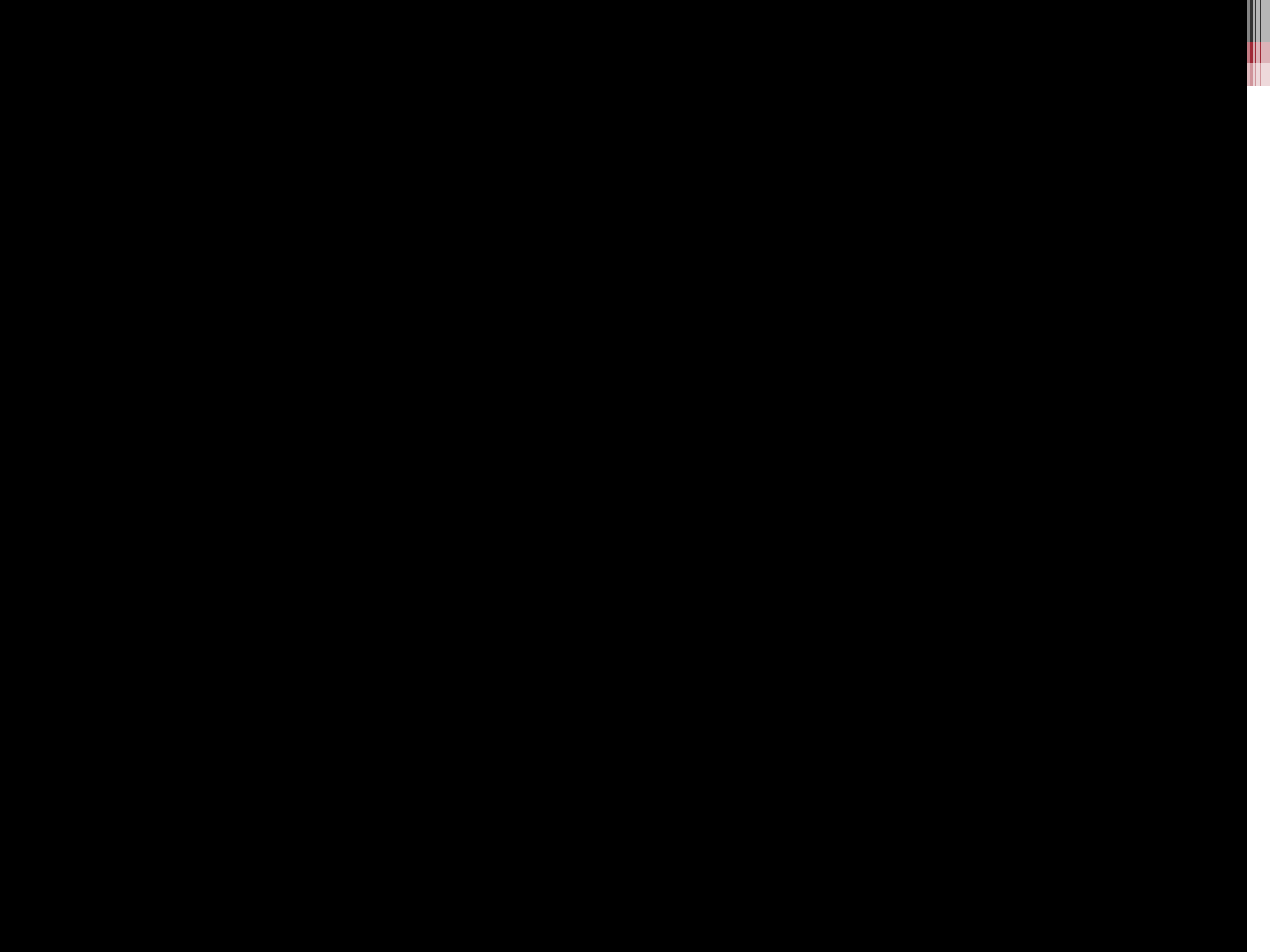
# Analysis Basics

# Why Bones Break



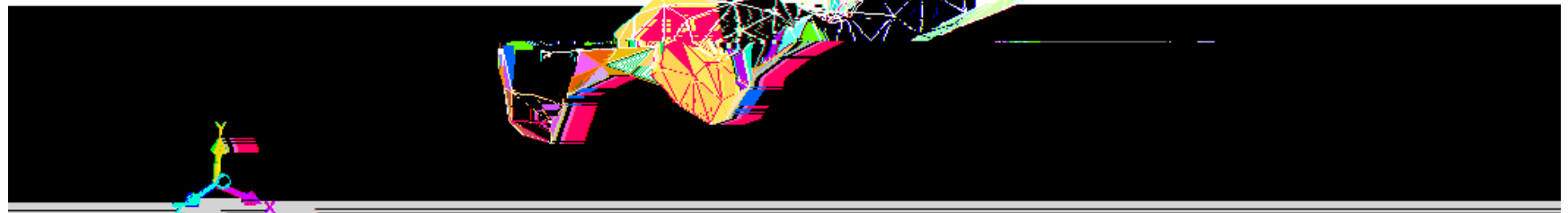
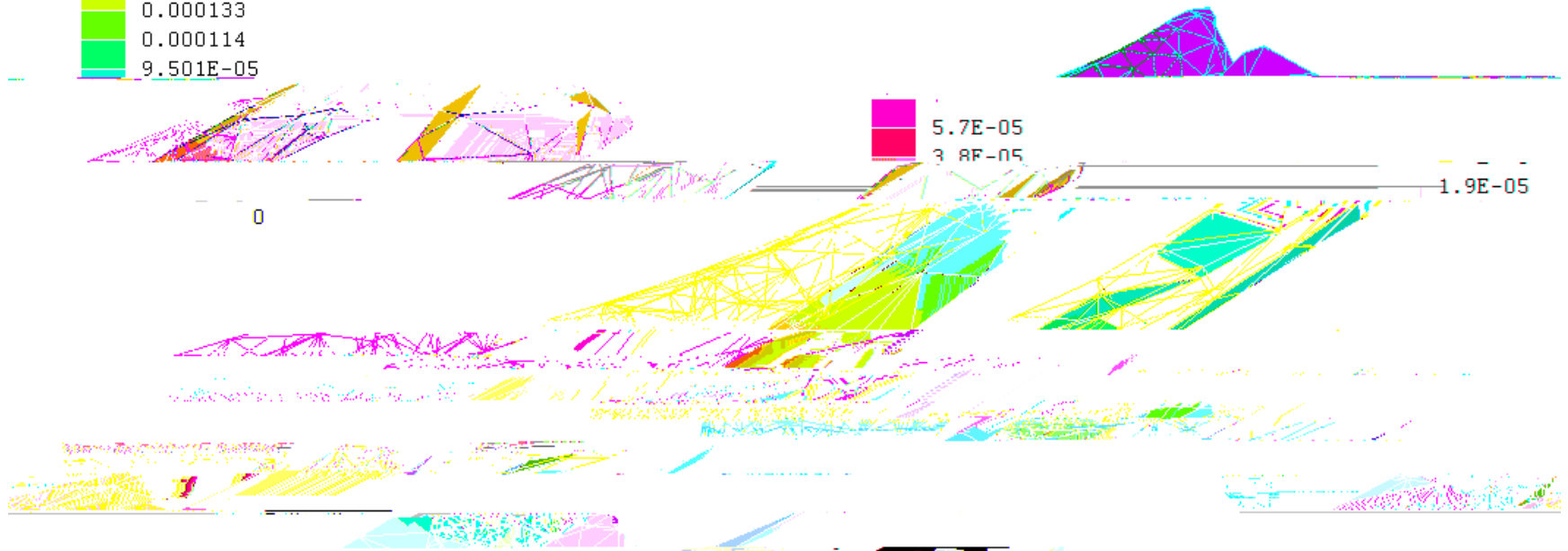
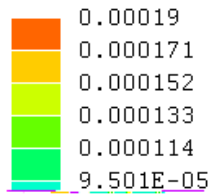
# Why Bones Break





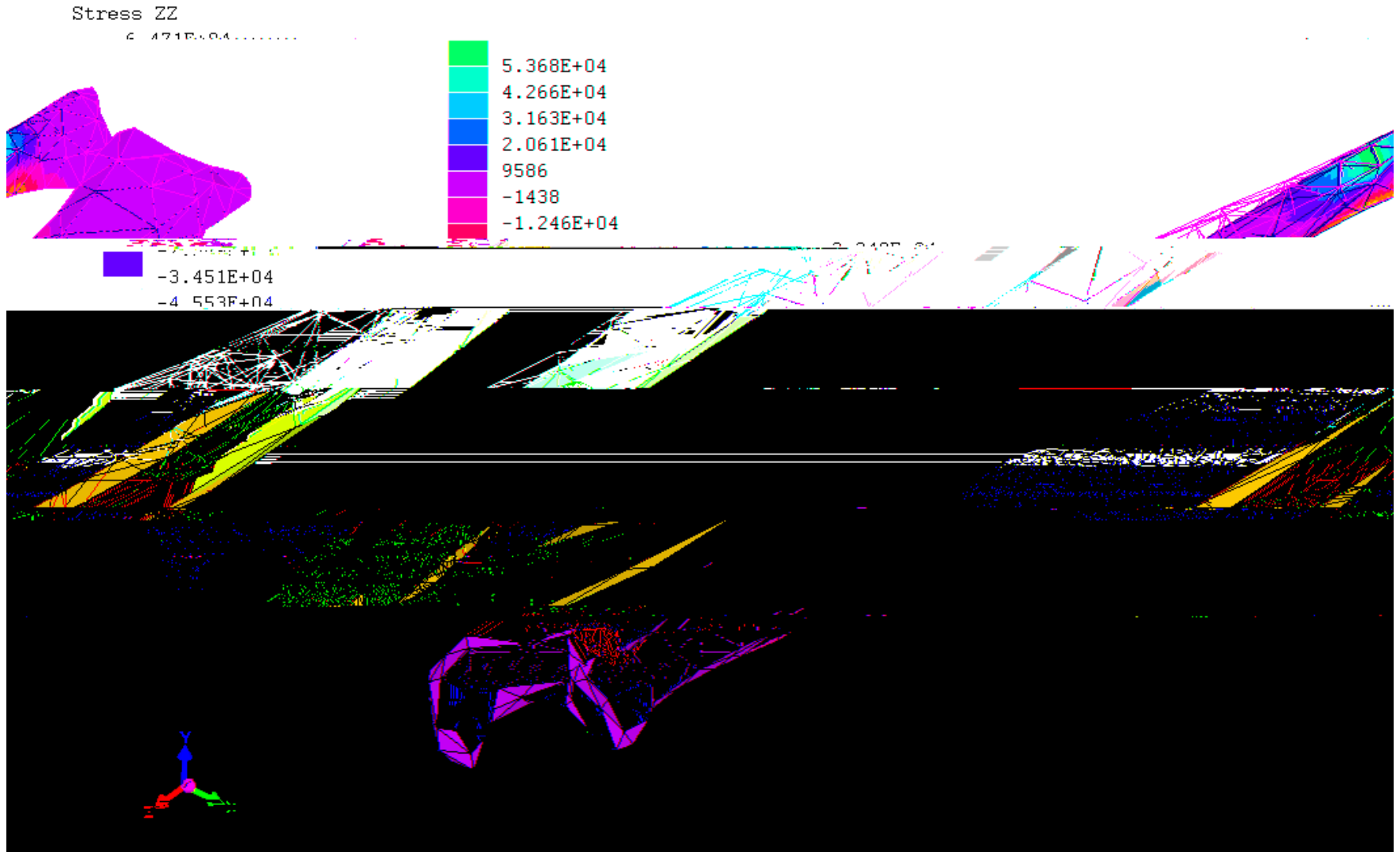
# Current Model

Displacement Magnitude





# Current Model





# Future Work



# Future Work

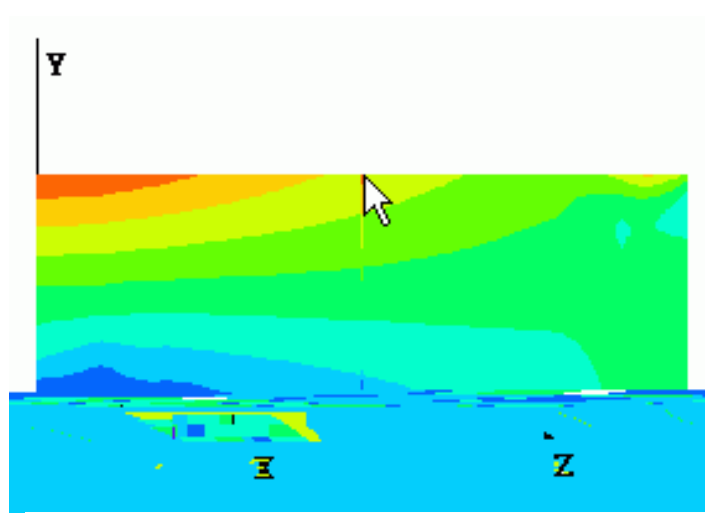
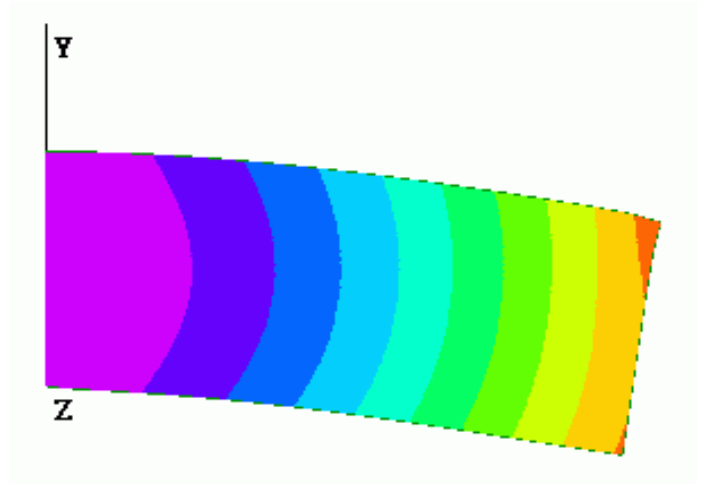
# Conclusion



# Works Cited

# FEA Review

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Node 54 X 5 Y 4 Z 0 stressxx 46.872266646973

Node 10 X 5 Y 0 Z 0 stressxx -46.8726816675875

