# simulation poly 0.5 inch rectangle

**Company**

**Author**
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**Software Used**
Solid Edge (220.00.04.002 x64)
Femap (12.0.1b)

**Solver Used**
NX Nastran (2019.1)

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## Table of Contents



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## 1. Introduction

# 2. Model Information

# 3. Study Properties

| Study Property | Value |
|---|---|
| Study name | Modal Study 21 |
| Study Type | Normal Modes |
| Mesh Type | Tetrahedral |
| Iterative Solver | On |
| Number of modes | 4 |
| Frequency Range | Minimum: 20 Hz<br>Maximum: 1.6e+04 Hz |
| NX Nastran Geometry Check | On |
| NX Nastran command line | |
| NX Nastran study options | |
| NX Nastran generated options | |
| NX Nastran default options | |
| Surface results only option | On |

# 4. Study Geometry

## 4.1 Solids

| Solid Name | Material | Mass | Volume | Weight |
|---|---|---|---|---|
| dml rectangle.par | Polyethylene, low density | 3.042 lbm | 304.235 in^3 | 3.040 lbf |

# 5. Material Properties

## 5.1 Polyethylene, low density

| Property | Value |
|---|---|

| | |
|---|---|
| Density | 0.010 lbm/in^3 |
| Coef. of Thermal Exp. | 0.0001 /F |
| Thermal Conductivity | 2.253 BTU/hr-ft-F |
| Specific Heat | 0.530 BTU/lbm-F |
| Modulus of Elasticity | 21.000 ksi |
| Poisson's Ratio | 0.350 |
| Yield Stress | 1.400 ksi |
| Ultimate Stress | 0.000 ksi |
| Elongation % | 0.000 |

# 6. Override Properties

# 7. Constraints

# 8. Mesh Information

| Mesh type | Tetrahedral |
|---|---|
| Total number of bodies meshed | 1 |
| Total number of elements | 2,317 |
| Total number of nodes | 4,858 |
| Subjective mesh size (1-10) | 3 |

# 9. Results

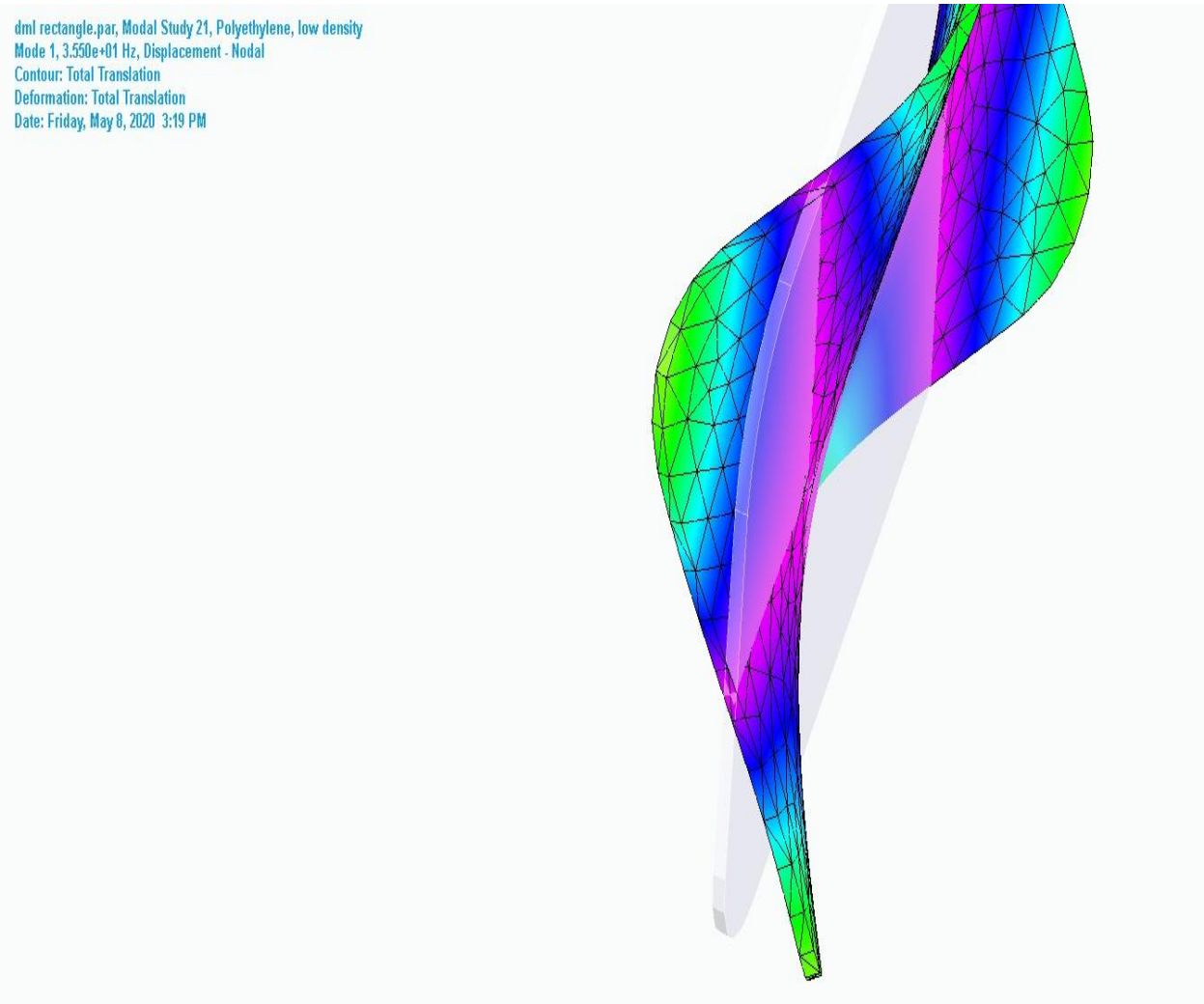
## 9.1 Displacement Results

| Result component: Total Translation | | | | |
|---|---|---|---|---|
| **Extent** | **Value** | **X** | **Y** | **Z** |
| **Mode 1, 3.550e+01 Hz** | | | | |
| **Minimum** | 0.379 in | 0.000 in | 9.799 in | 0.000 in |
| **Maximum** | 127 in | 0.764 in | 1.649 in | -0.250 in |
| **Mode 2, 4.019e+01 Hz** | | | | |

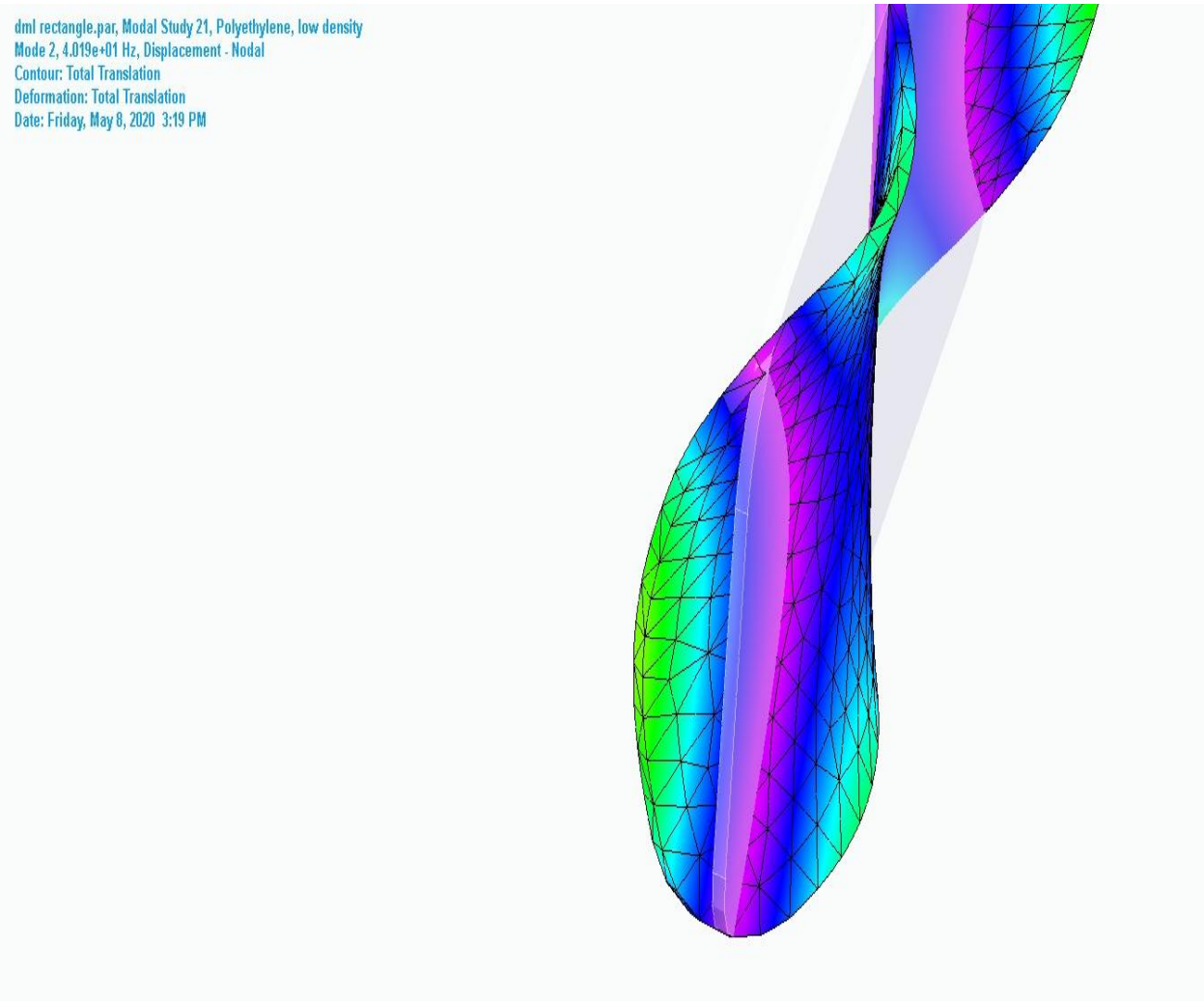
| | | | | |
|---|---|---|---|---|
| **Minimum** | 0.379 in | 15.875 in | 19.597 in | 0.000 in |
| **Maximum** | 127 in | 0.000 in | 9.799 in | 0.250 in |

| **Mode 3, 4.153e+01 Hz** | | | | |
|---|---|---|---|---|
| **Minimum** | 0.379 in | 31.750 in | 4.644 in | 0.000 in |
| **Maximum** | 127 in | 4.000 in | 0.000 in | 0.250 in |

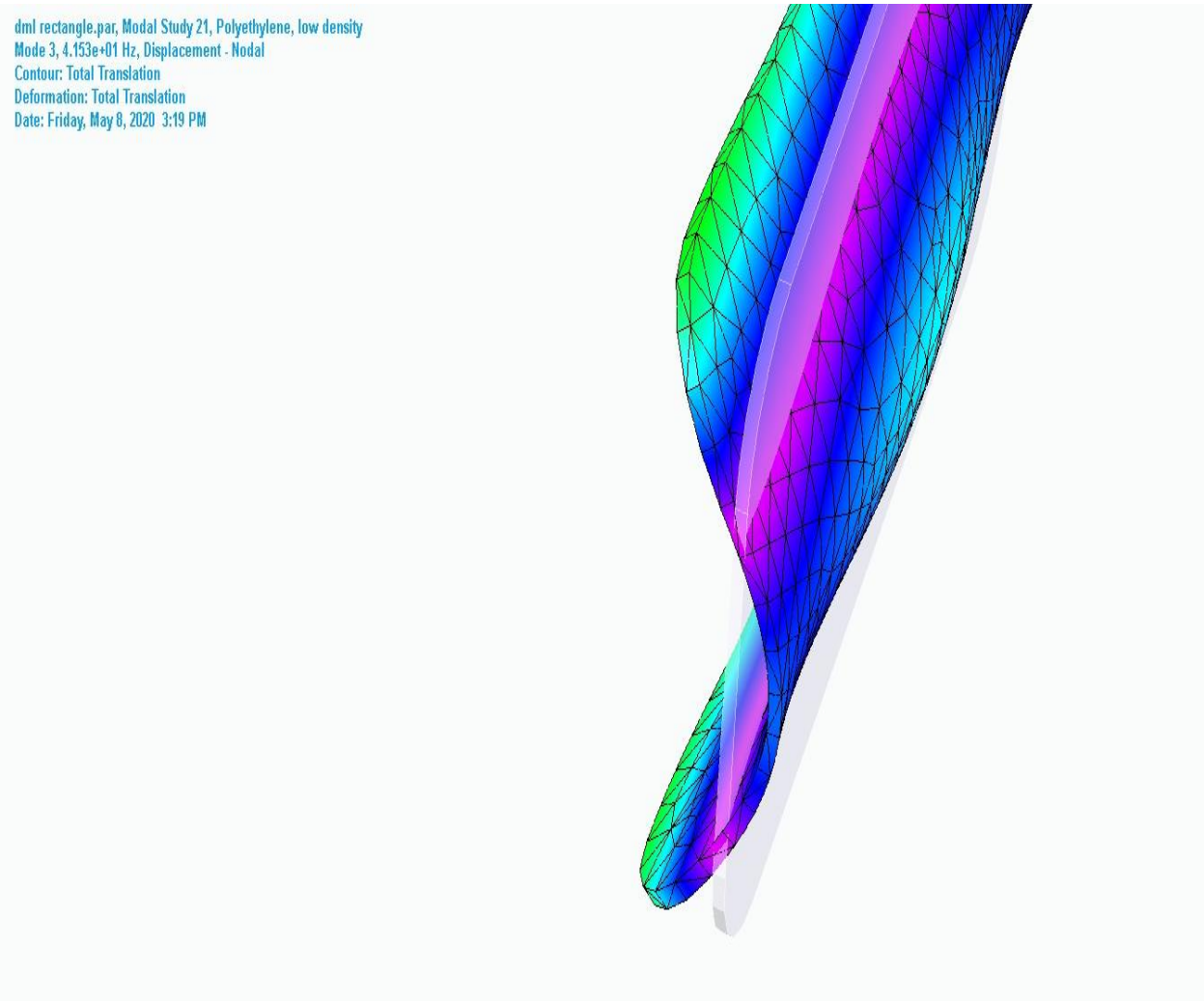
| **Mode 4, 5.605e+01 Hz** | | | | |
|---|---|---|---|---|
| **Minimum** | 0.379 in | 15.875 in | 0.000 in | 0.000 in |
| **Maximum** | 127 in | 28.986 in | 0.196 in | -0.250 in |



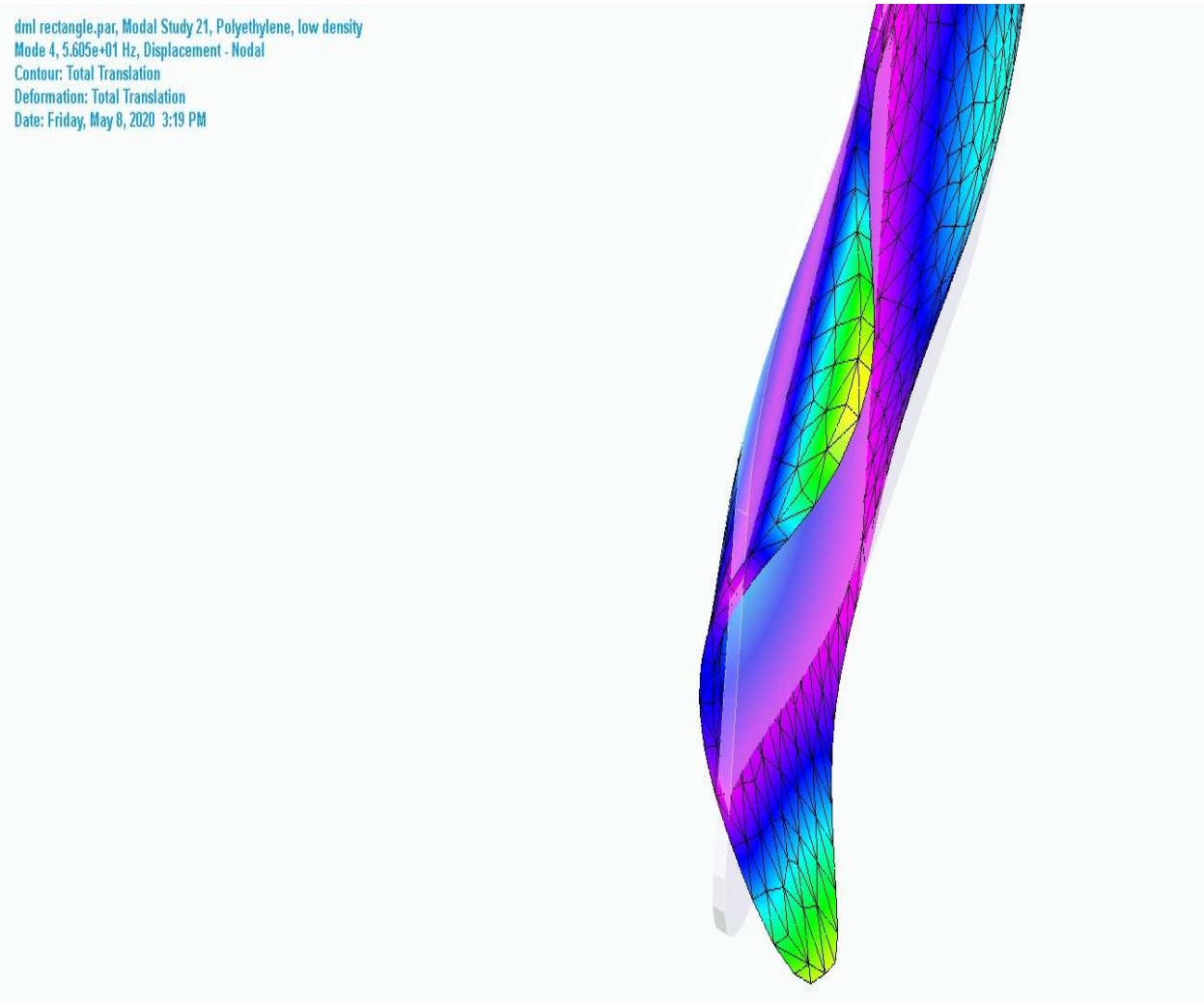

Mode 1


dml rectangle.par, Modal Study 21, Polyethylene, low density
Mode 2, 4.019e+01 Hz, Displacement - Nodal
Contour: Total Translation
Deformation: Total Translation
Date: Friday, May 8, 2020 3:19 PM

Mode 2


dml rectangle.par, Modal Study 21, Polyethylene, low density
Mode 3, 4.153e+01 Hz, Displacement - Nodal
Contour: Total Translation
Deformation: Total Translation
Date: Friday, May 8, 2020 3:19 PM

Mode 3



Mode 4

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# 10. Optimizations

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# 11. Conclusion

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# 12. Disclaimer

## Important Information

This report should not be used to solely judge a design idea's suitability to a given set of environmental conditions. Siemens makes every effort to ensure that its products provide as much guidance and help as possible. However this does not replace good engineering judgment, which is always the responsibility of our users. A qualitative approach to engineering should ensure that the results of this evaluation are evaluated in conjunction with the practical experience of design engineers and analysts, and ultimately experimental test data. The results contained within this report are believed to be reliable but should not be construed as providing any sort of warranty for fitness of purpose.