2022

Określenie sztywności połączenia nitowego

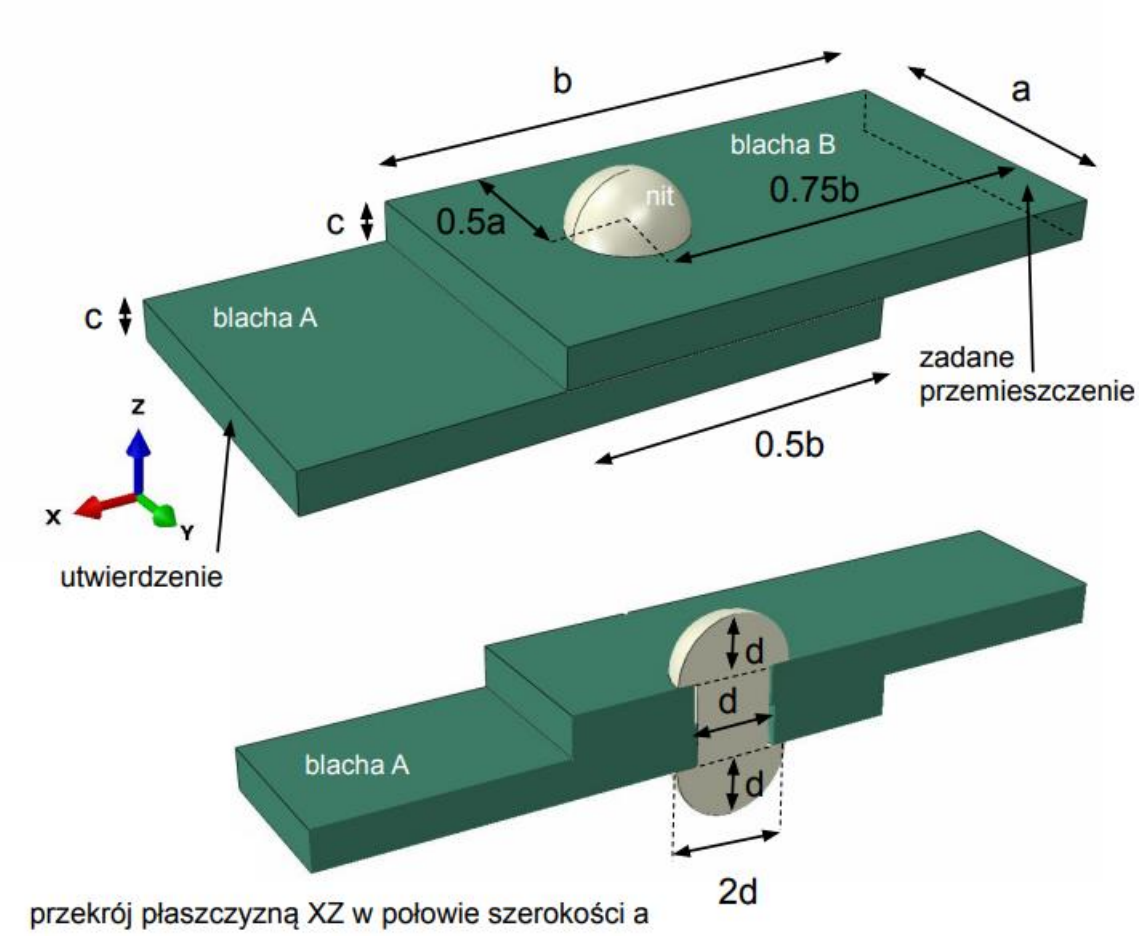
PROJEKT NR 1

ONYSZCZUK PIOTR

Spis treści

Przyjęte parametry

Wymiary



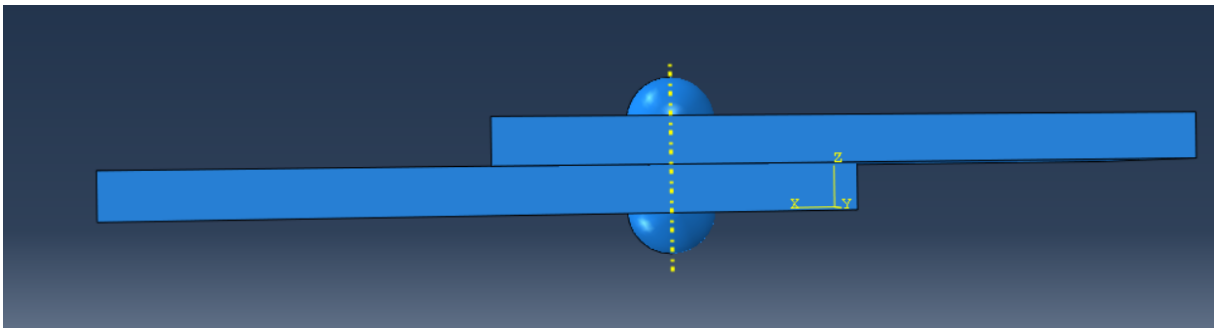
przekrój płaszczyzną XZ w połowie szerokości a

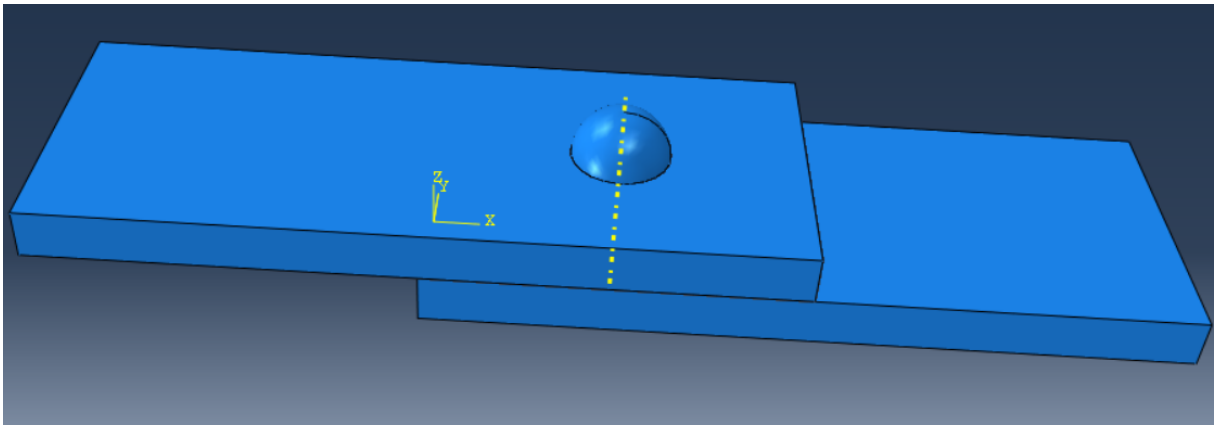
- a = 60
- b = 150
- c = 10
- d = 10

Współczynniki

- gęstość: 7800kg/m3
- moduł Younga: 200e9
- współczynnik Poissona: 0.3
- friction coeff: 0.2

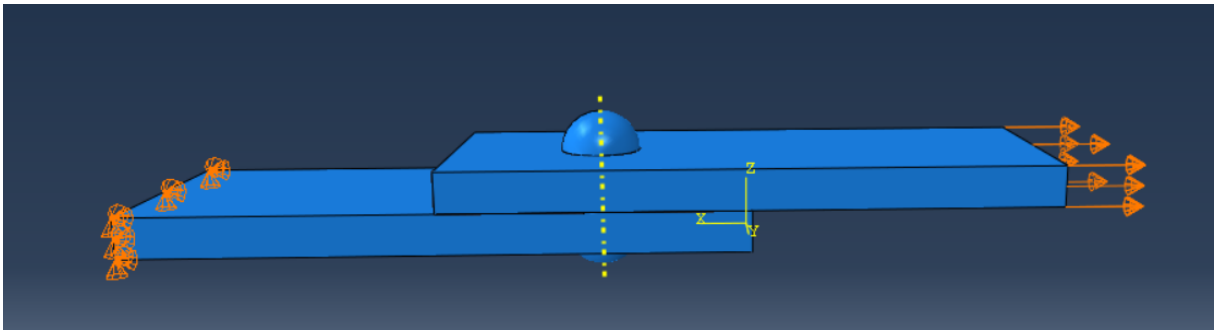
Złożenie części



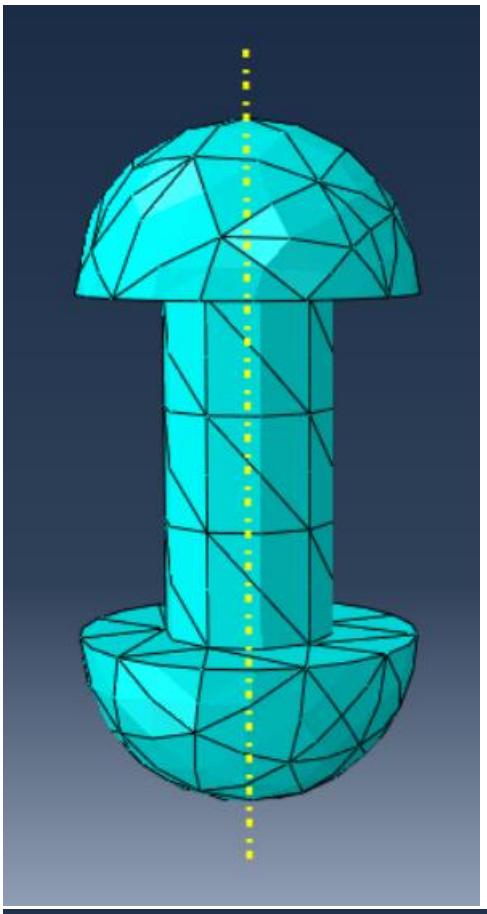


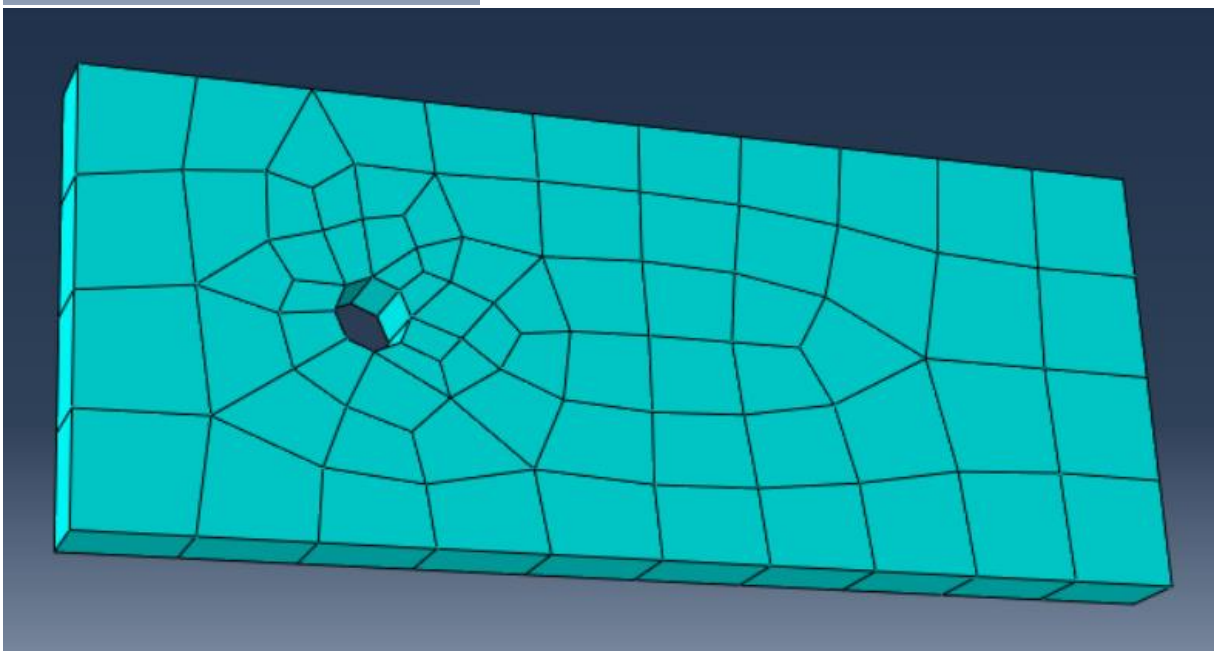
Warunki brzegowe

Jedna ze ścian jest utwierdzona, druga ma zadane przesunięcie



Siatki

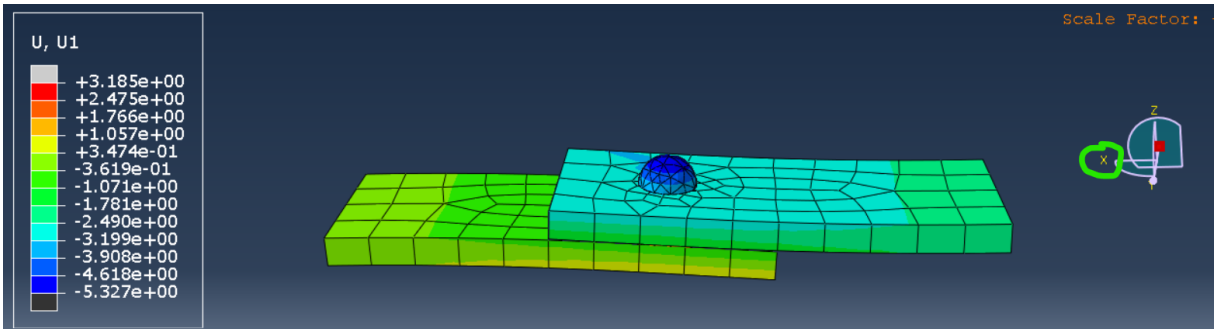


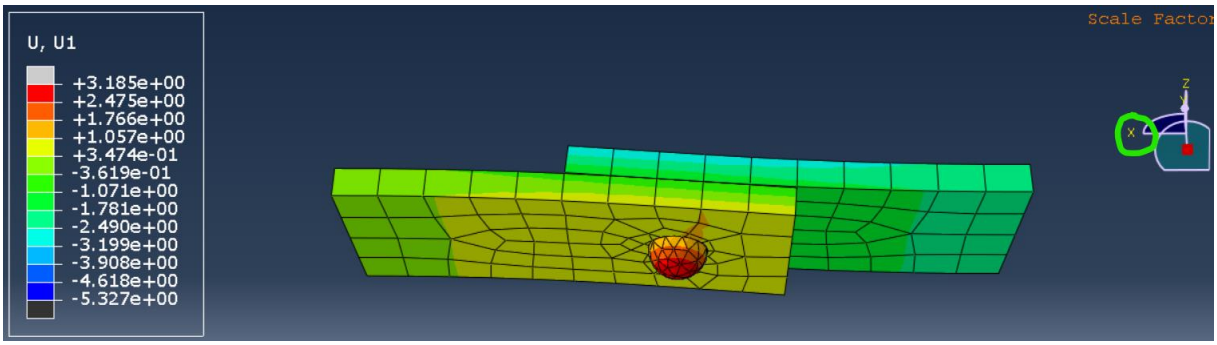


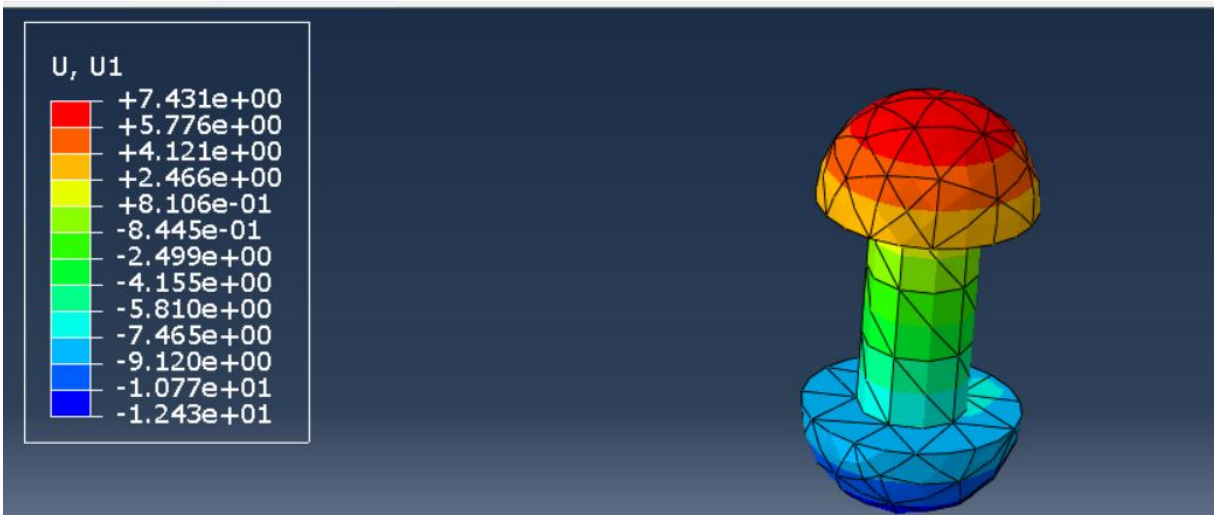
Mapy

Przemieszczenia

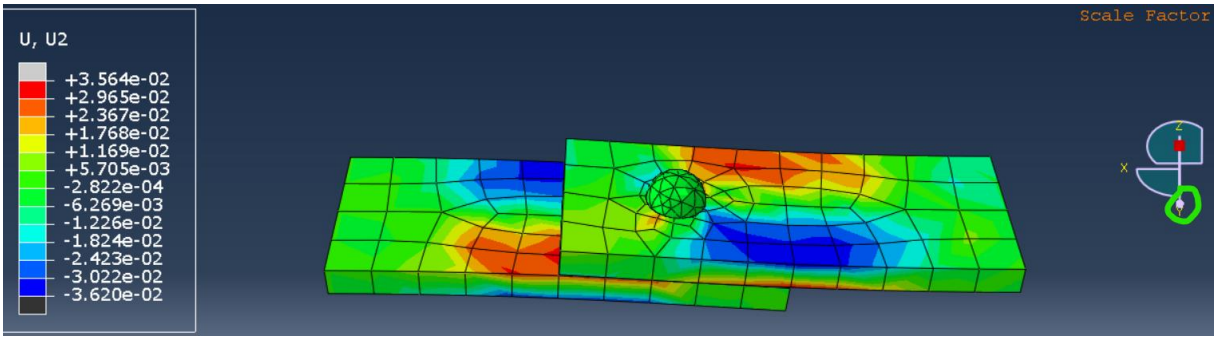
U1

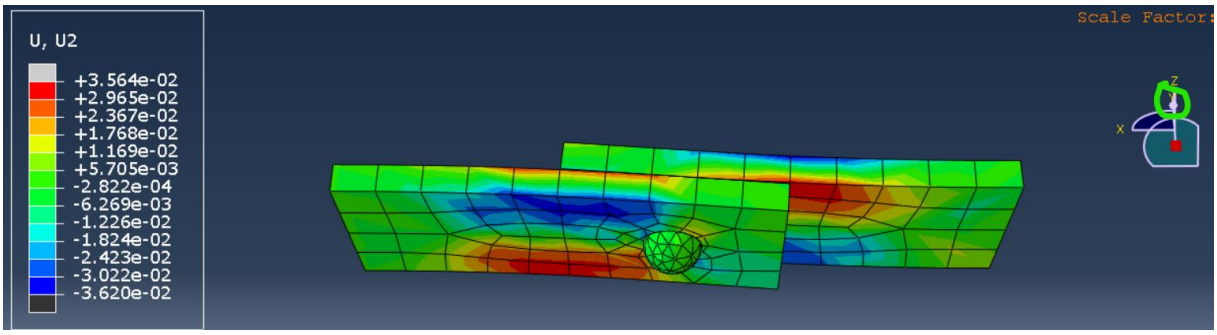






U2

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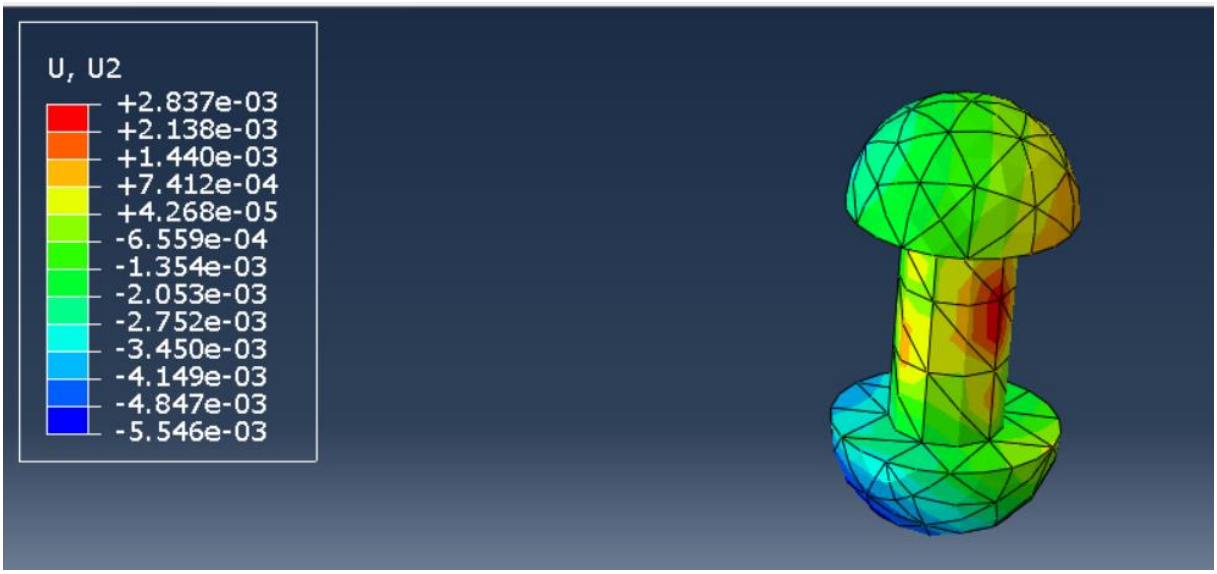
+3.564e-02
+2.965e-02
+2.367e-02
+1.768e-02
+1.169e-02
+5.705e-03
-2.822e-04
-6.269e-03
-1.226e-02
-1.824e-02
-2.423e-02
-3.022e-02
-3.620e-02
Scale Factor:
Z
X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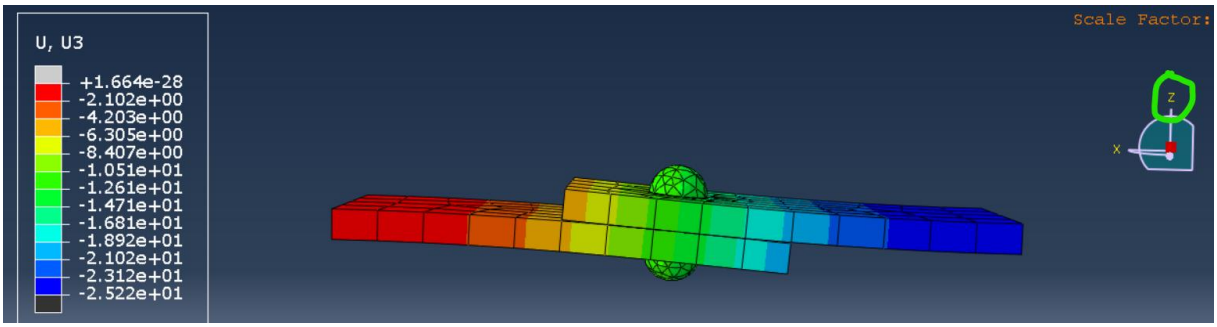
+2.837e-03
+2.138e-03
+1.440e-03
+7.412e-04
+4.268e-05
-6.559e-04
-1.354e-03
-2.053e-03
-2.752e-03
-3.450e-03
-4.149e-03
-4.847e-03
-5.546e-03

U3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-4.203e+00
-6.305e+00
-8.407e+00
-1.051e+01
-1.261e+01
-1.471e+01
-1.681e+01
-1.892e+01
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-2.312e+01
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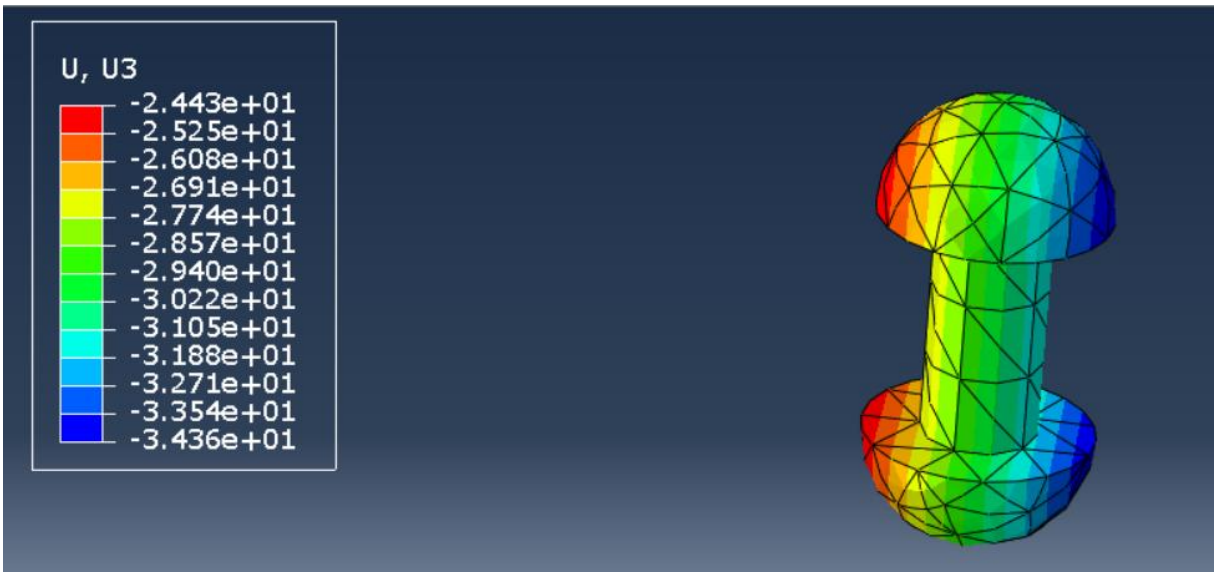
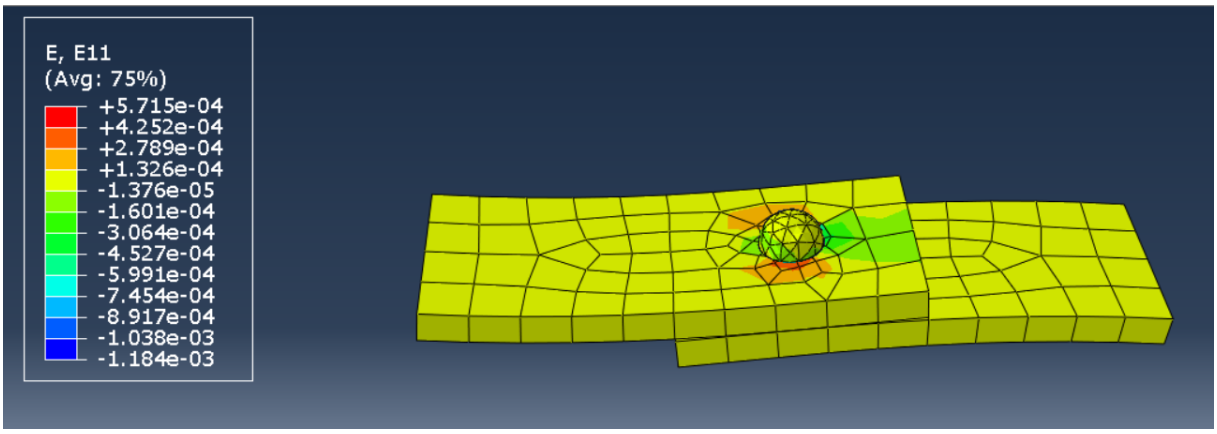
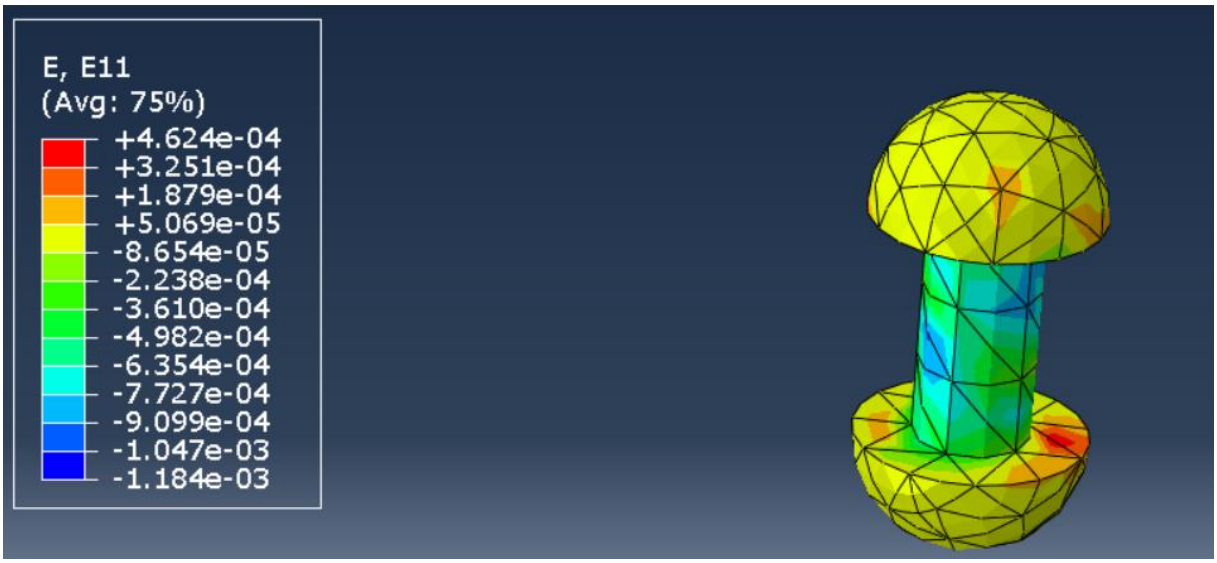
Scale Factor:
Z
X



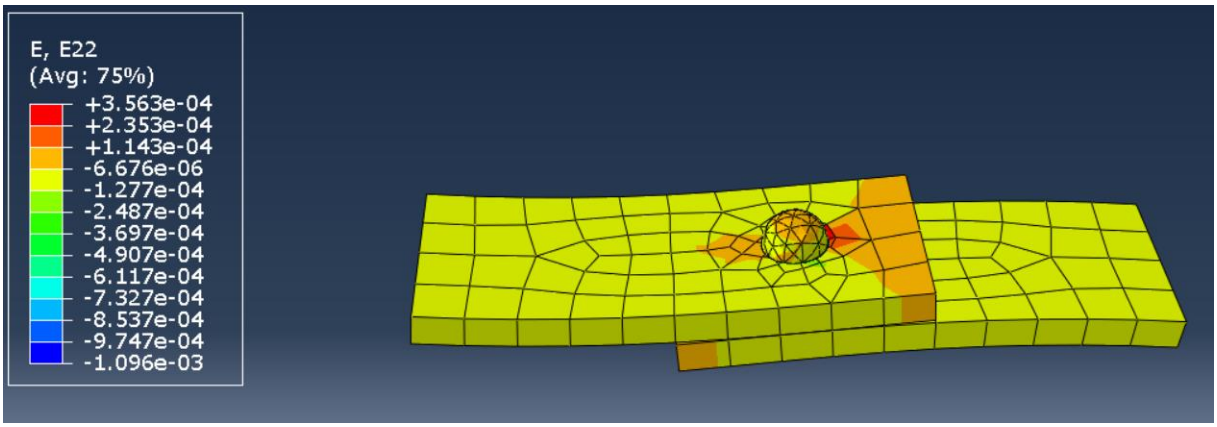
Odkształcenia

E11





E22


E, E22
(Avg: 75%)
+3.563e-04
+2.353e-04
+1.143e-04
-6.676e-06
-1.277e-04
-2.487e-04
-3.697e-04
-4.907e-04
-6.117e-04
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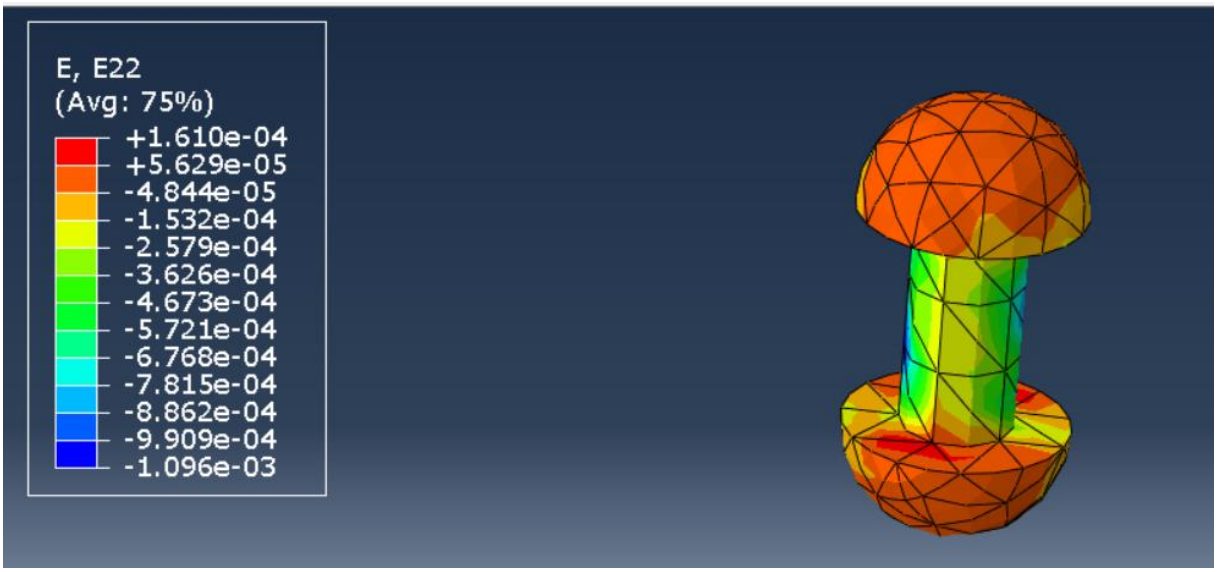
E, E22
(Avg: 75%)
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+5.629e-05
-4.844e-05
-1.532e-04
-2.579e-04
-3.626e-04
-4.673e-04
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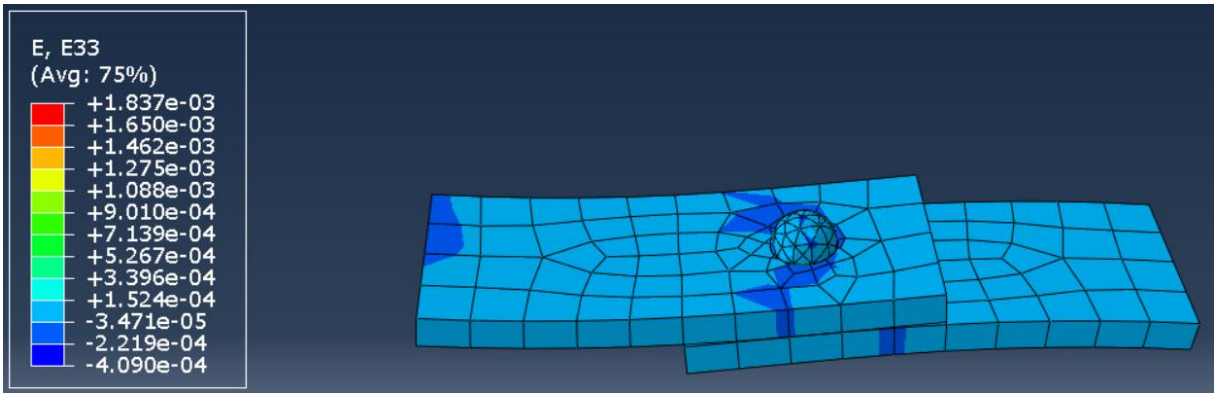
-1.096e-03

E33


E, E33
(Avg: 75%)
+1.837e-03
+1.650e-03
+1.462e-03
+1.275e-03
+1.088e-03
+9.010e-04
+7.139e-04
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+1.524e-04
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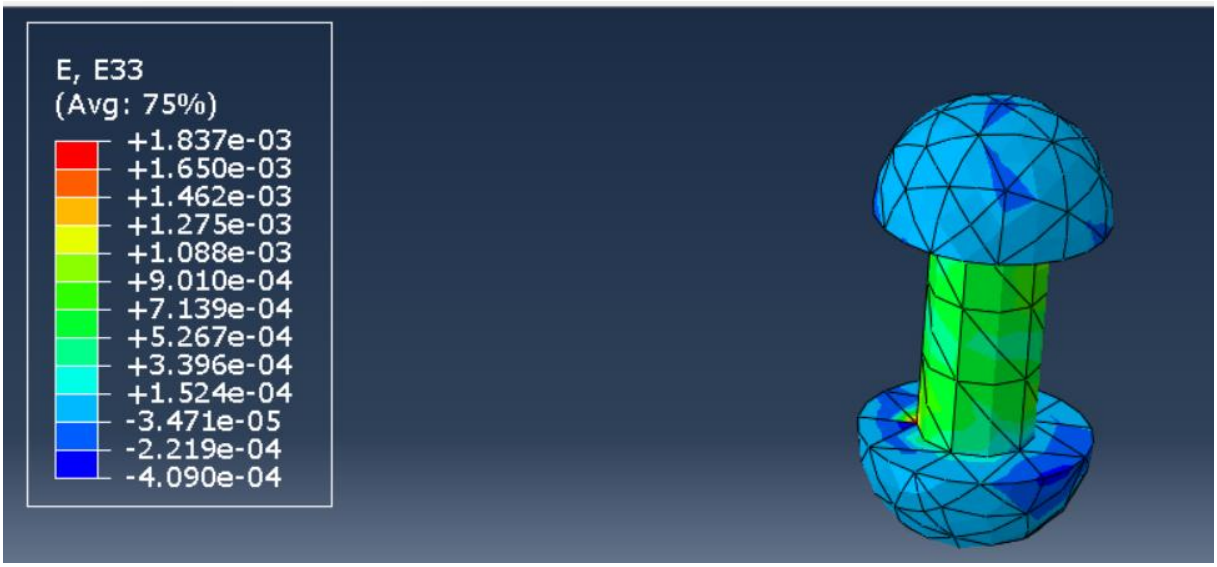
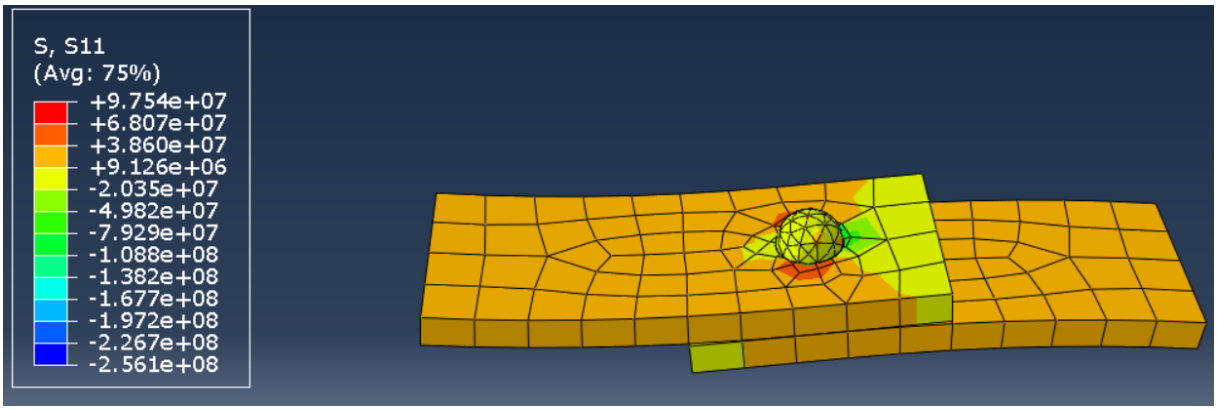
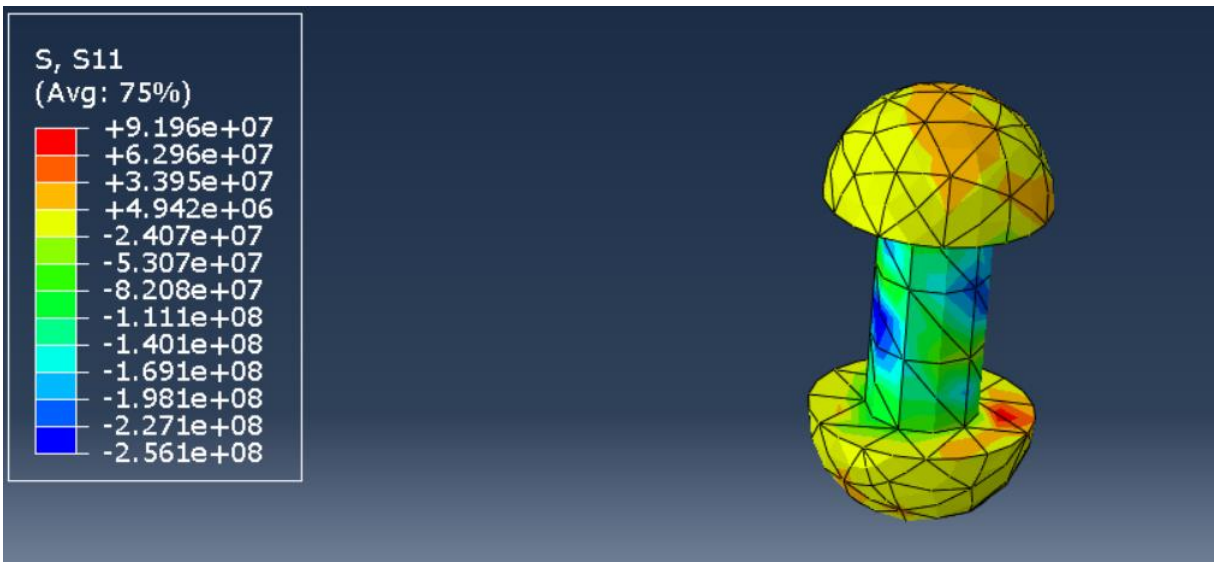
-2.219e-04
-4.090e-04



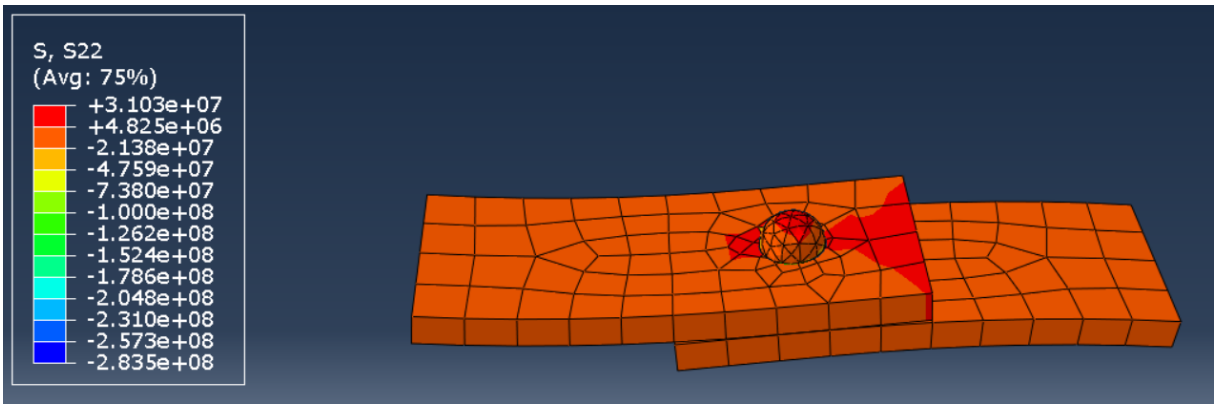
Naprężenia

S11





S22


S, S22
(Avg: 75%)
+3.103e+07
+4.825e+06
-2.138e+07
-4.759e+07
-7.380e+07
-1.000e+08
-1.262e+08
-1.524e+08
-1.786e+08
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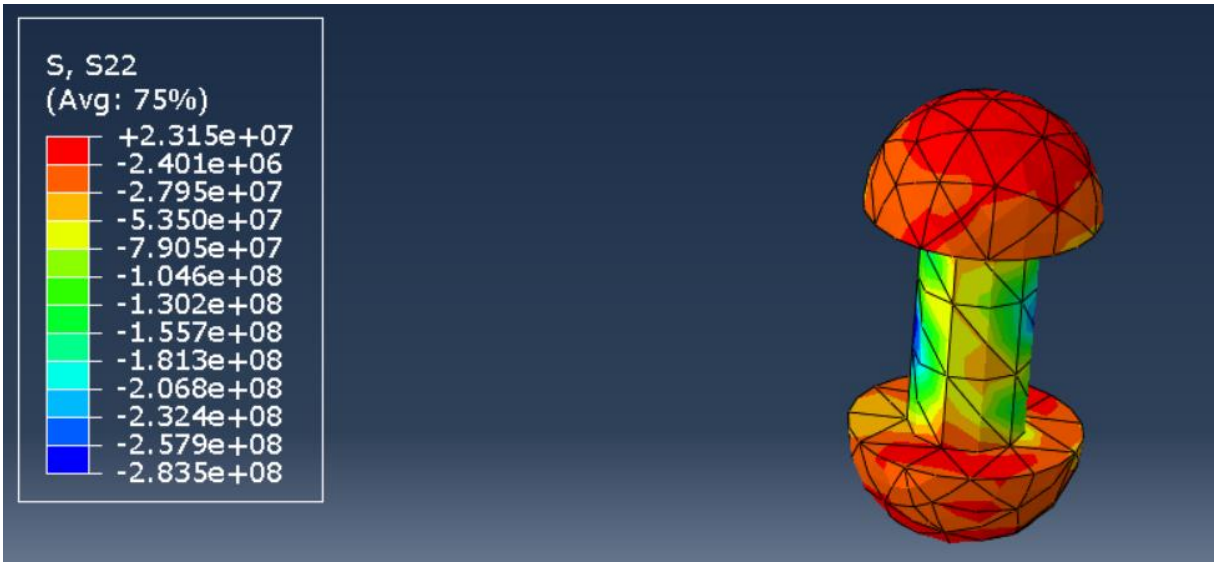
-2.310e+08
-2.573e+08
-2.835e+08


S, S22
(Avg: 75%)
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-2.401e+06
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-5.350e+07
-7.905e+07
-1.046e+08
-1.302e+08
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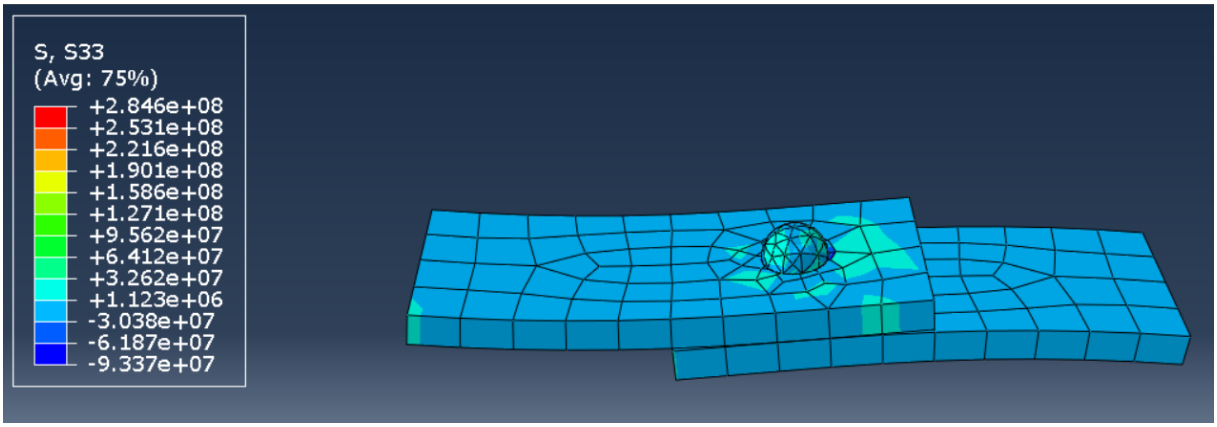
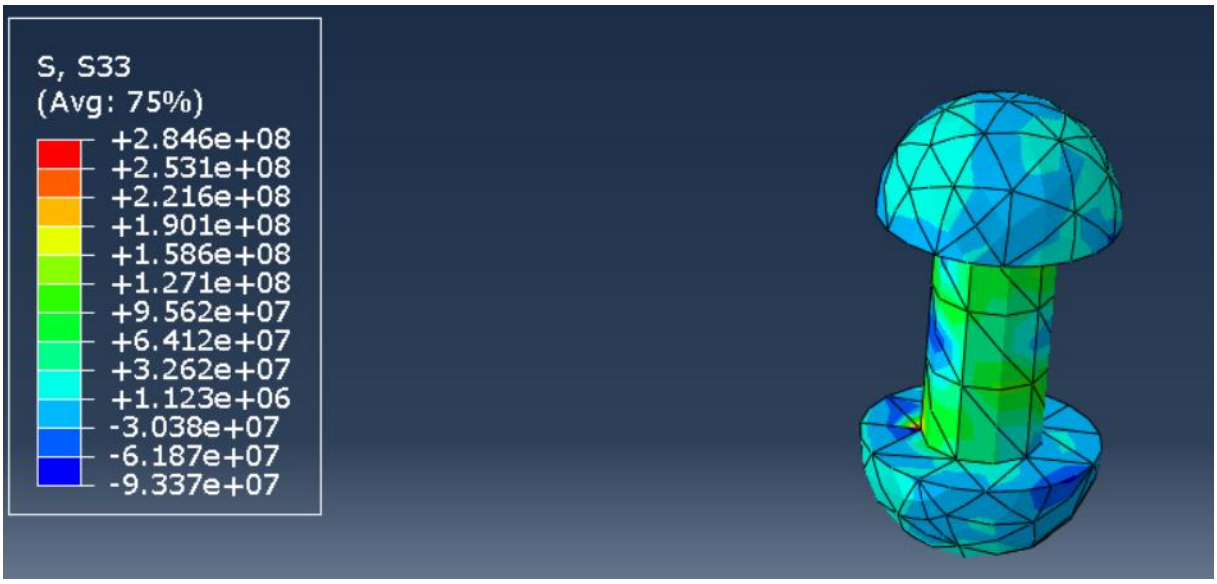
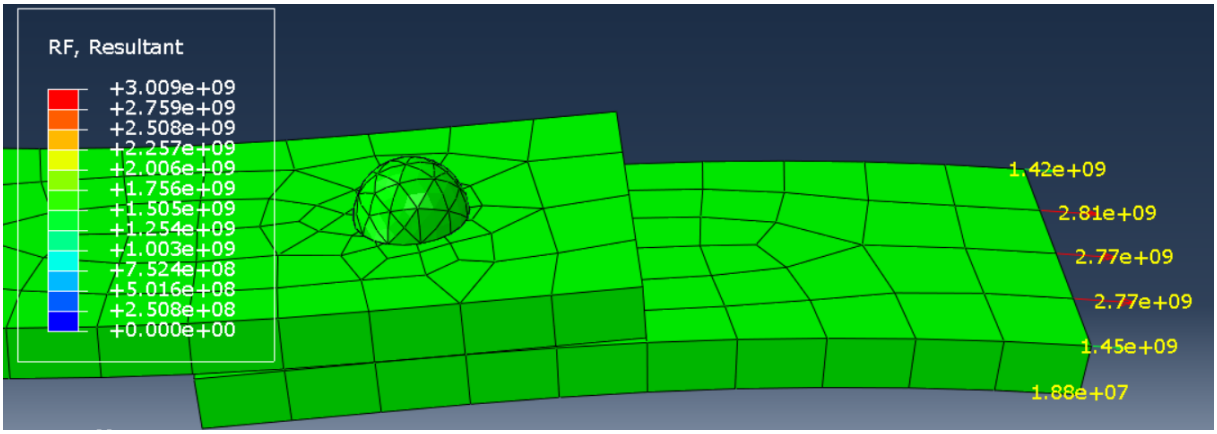
-2.579e+08
-2.835e+08

S33


S, S33
(Avg: 75%)
+2.846e+08
+2.531e+08
+2.216e+08
+1.901e+08
+1.586e+08
+1.271e+08
+9.562e+07
+6.412e+07
+3.262e+07
+1.123e+06
-3.038e+07
-6.187e+07
-9.337e+07



Sztywność



Zadane przesunięcie = 5 [m]

RF = 1.42e9+2.81e9+2.77e9+2.77e9+1.45e9+1.88e7=11.23e9 [N]

Sztywność = 11.23e9/5=2.25e9 [N/m]