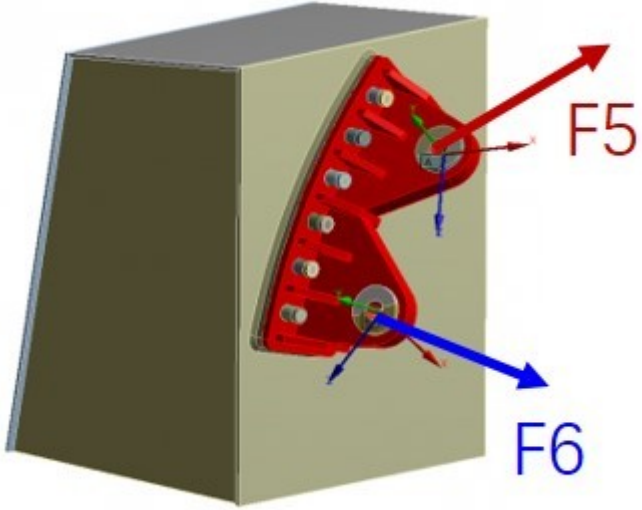


4.

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Fatigue

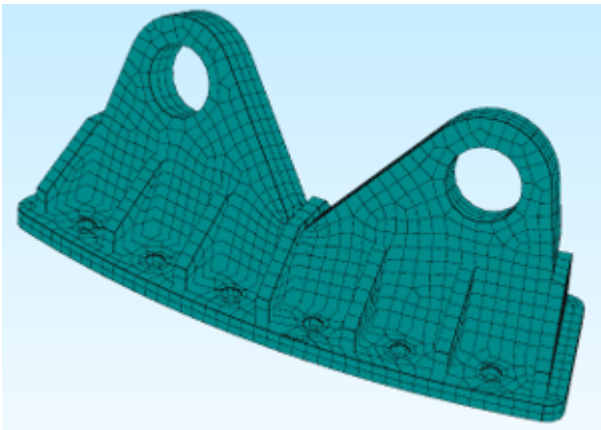


4.1

4.1

--	--	--	--

Fatigue example/boltedFatigue/en-model.txt 4.2 ANS



□4.2 □□□□□□□□□□

Fatigue

```
bash read model fem-model.txt -style ansys -surface 3d
bash write model fem-model.tet -style tetgen
```

ANSYS FatigueModel.txt

TETGEN fem-model.tet Moleshow

4.2

example/bolted-joint/load-cases.json

```
"A": {
  "repeats": 750000.0,
  "components": {
    "Pret": {
      "scale": 1.0,
      "data": [ ... ],
      "unit": "x143kN",
      "offset": 0.0
    },
    "F5": {
      "scale": 1.0,
      "data": [ ... ],
      "unit": "x100kN",
      "offset": 0.0
    },
    "F6": {
      "scale": 1.0,
      "data": [ ... ],
      "unit": "x100kN",
      "offset": 0.0
    },
    "Time": {
      "scale": 1.0,
      "data": [ ... ],
      "unit": "s",
      "offset": 0.0
    }
  }
},
"B": {
  "repeats": 750000.0,
```

```

    "components": {
      "Pret": {
        "scale": 1.0,
        "data": [ ... ],
        "unit": "x143kN",
        "offset": 0.0
      },
      .....
    },
    .....

```

```

4A B C D 4 4

```

```

4A repeats A 75000.0 A -

```

```

A 4 Pret F5 F6 Time Time 3 Pret

```

Fatigue

```

oads read cases load-cases.json -style json

```

```

SON

```

4.3

```

(Pretension) F5 F6

```

```

example/bolted-joint/stress-Pretension.fes

```

```

F5 F6 F5 F6 100 kN F5
-100kN.fes stress-F6-100kN.fes

```

igue

```

oads read stress sPret 1d-linear Pret 1.0 stress-Pretension.fes -style ansys

```

```

oads read stress sF5 1d-bilinear F5 -1.0 stress-F5-100kN.fes -style ansys

```

```

oads read stress sF5 1d-bilinear F5 1.0 stress-F5+100kN.fes -style ansys

```

```

oads read stress sF6 1d-bilinear F6 -1.0 stress-F6-100kN.fes -style ansys

```

```

oads read stress sF6 1d-bilinear F6 1.0 stress-F6+100kN.fes -style ansys

```

```

ANSYS stress-Pretension.fes "Pret" sPret 1d-linear

```

```

ANSYS stress-F5-100kN.fes "F5" 1d-bilinear -

```

4.4 SN

SN example/bolted-joint/sn-steel0.js Fatigue 3.5 SN

```
after read steel0 sn-steel0.json
```

```
sn-steel0.json steel0
```

4.5

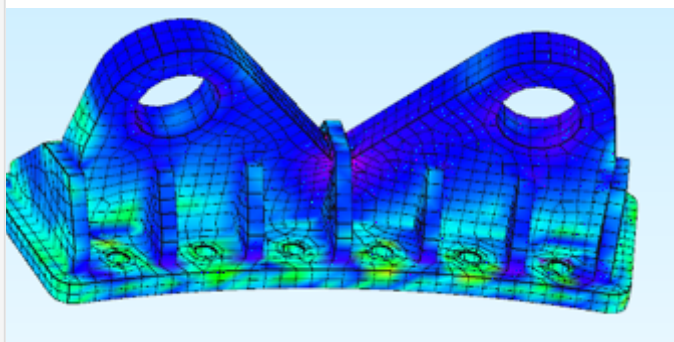
```
life set surface -mat steel0 -smode pnmax -cmode rainflow
life run -report 10
life export result.txt -style text
```

```
surface steel0 SN pnmax rainflow
```

```
10
```

```
TEXT results.txt
```

```
3 Moleshow
```



```
3
```

4.6

```
example/bolted-joint/script-run.scp
```