

DOMAČA NALOGA 6

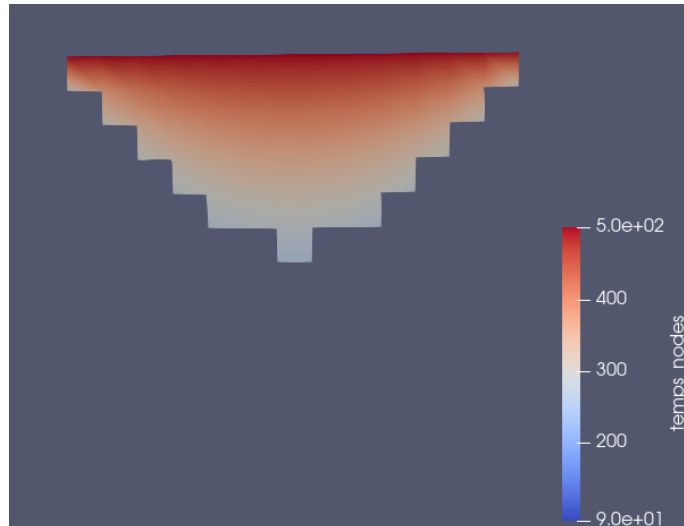
Napredna računalniška orodja - NRO

Luka Uranič, 23211047

Obdelava rezultatov simulacij

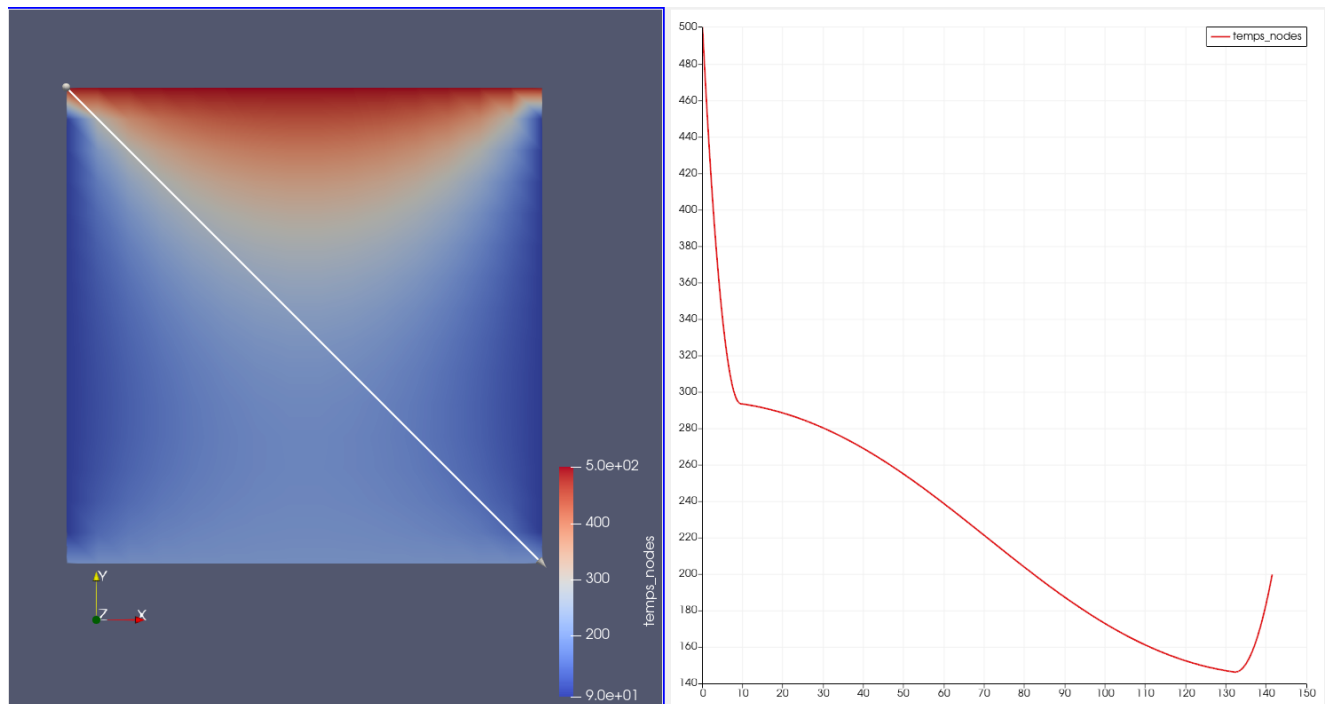
1. Primer

1. Izrišite samo celice, ki imajo temperaturo večjo od 250°C.



Slika 1: Prikaz celic, ki imajo temperaturo nad 250°C

2. Izrišite potek temperature po diagonali od točke A do B.



Slika 2: Prikaz izrisa diagonale

2. Primer

3. Kolikšna je največja temperatura pri času 990 s?

Type

Multi-block Dataset (Unstructured Grid)

of Cells

131.117

of Points

25.802 (float)

of TimeSteps

99

Current Time

990 (range: [10, 990])

Memory:

4,2094 GB

Bounds

-0.5 to 0.5 (delta: 1)

-0.2 to 0.2 (delta: 0.4)

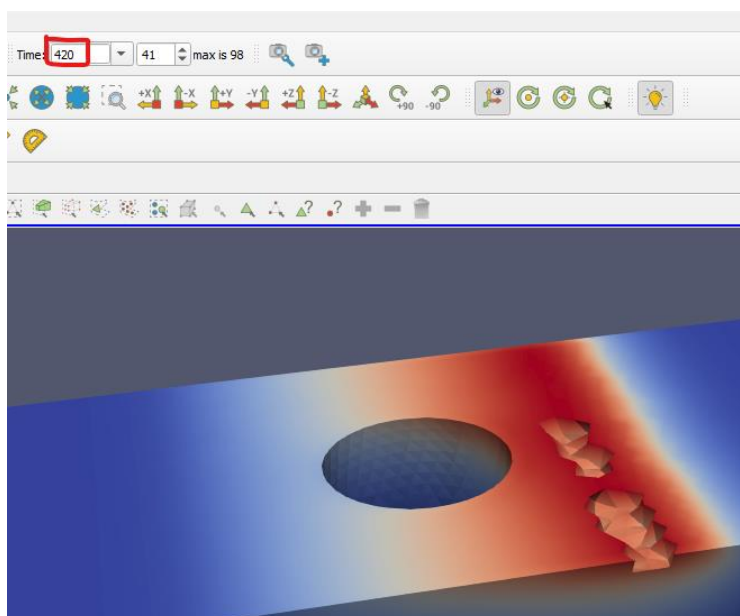
0 to 0.2 (delta: 0.2)

Data Arrays

| Name | Type | Ranges |
|-----------|-------|---|
| DT | float | [0.0000039339897739409935, 0.0000056493800... |
| fluxMag | float | [323.93133544921875, 2398718464] |
| gradTx | float | [-66274.46875, 21078.94921875] |
| gradTy | float | [-14926.5830078125, 11818.4150390625] |
| gradTz | float | [-4042.778076171875, 75431.796875] |
| HF | float | [0, 1961226.625] |
| qFVM | float | [0, 1961226.625] |
| qINV | float | [298.3956604003906, 2397559808] |
| T | float | [110.00499725341797, 4784.44677734375] |
| thermCond | float | [15.63010025024414, 26] |
| DT | float | [0.0000039339897739409935, 0.0000056493800... |

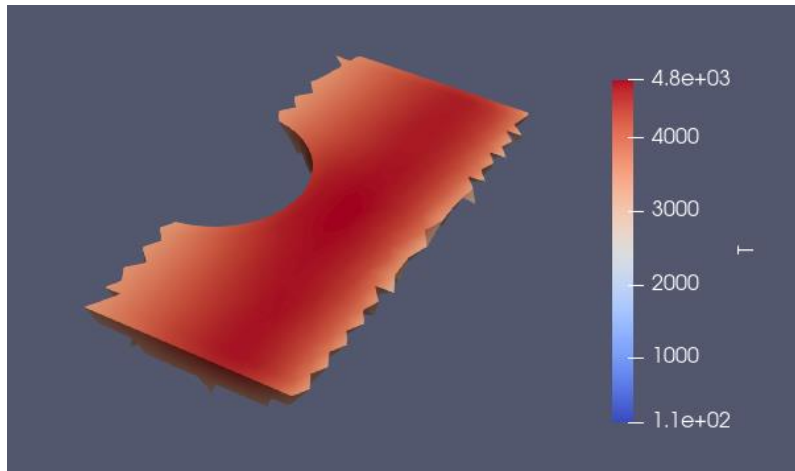
Slika 3: Prikaz najvišje temperature pri času 990 s, ki znaša 4784,45°C

4. Predpostavimo, da je klada narejena iz volframa (W). Volfram ima zelo dobre termične lastnosti. Temperatura tališča pri volframu znaša $T_{tal} \approx 3400^{\circ}\text{C}$. Pri katerem času se klada začne taliti?



Slika 4: Klada se začne taliti med časoma 410s in 420s






5. 5. Kolikšen del klade se stali po 990s segrevanja? Prikažite del klade, ki se stali. Izračunajte volumen staljenega dela.



Slika 5: Prikaz staljenega volumna klade

Izračun staljenega volumna klade z filtrom **Cell Size**:

| Data Statistics | |
|-----------------|---|
| Type | Multi-block Dataset (Unstructured Grid) |
| # of Cells | 2.198 |
| # of Points | 773 (float) |
| # of TimeSteps | 99 |
| Current Time | 990 (range: [10, 990]) |
| Memory: | 132 KB |
| Bounds | 0.00425179 to 0.203063 (delta: 0.198811) -0.2 to 0.2 (delta: 0.4) 0.162649 to 0.2 (delta: 0.037351) |

| Data Arrays | | |
|--|--------|--|
| Name | Type | Ranges |
|  T | float | [2615.879638671875, 4784.44677734375] |
|  T | float | [3400.0400390625, 4626.68994140625] |
|  Volume Celice | double | [1.834808601761398e-7, 0.0000017833642...] |
|  CasePath (partial) | char | [0, 121] |
|  Volume Celice | double | [0.001206855223180302, 0.001206855223...] |

Slika 6: Skupni staljeni volumen znaša 0,0012069 m³