TEPX Thermal modelling

Stefanos Leontsinis
University of Zurich

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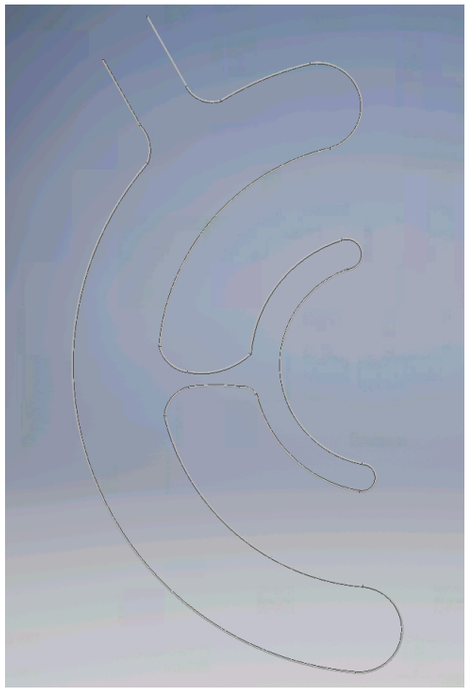
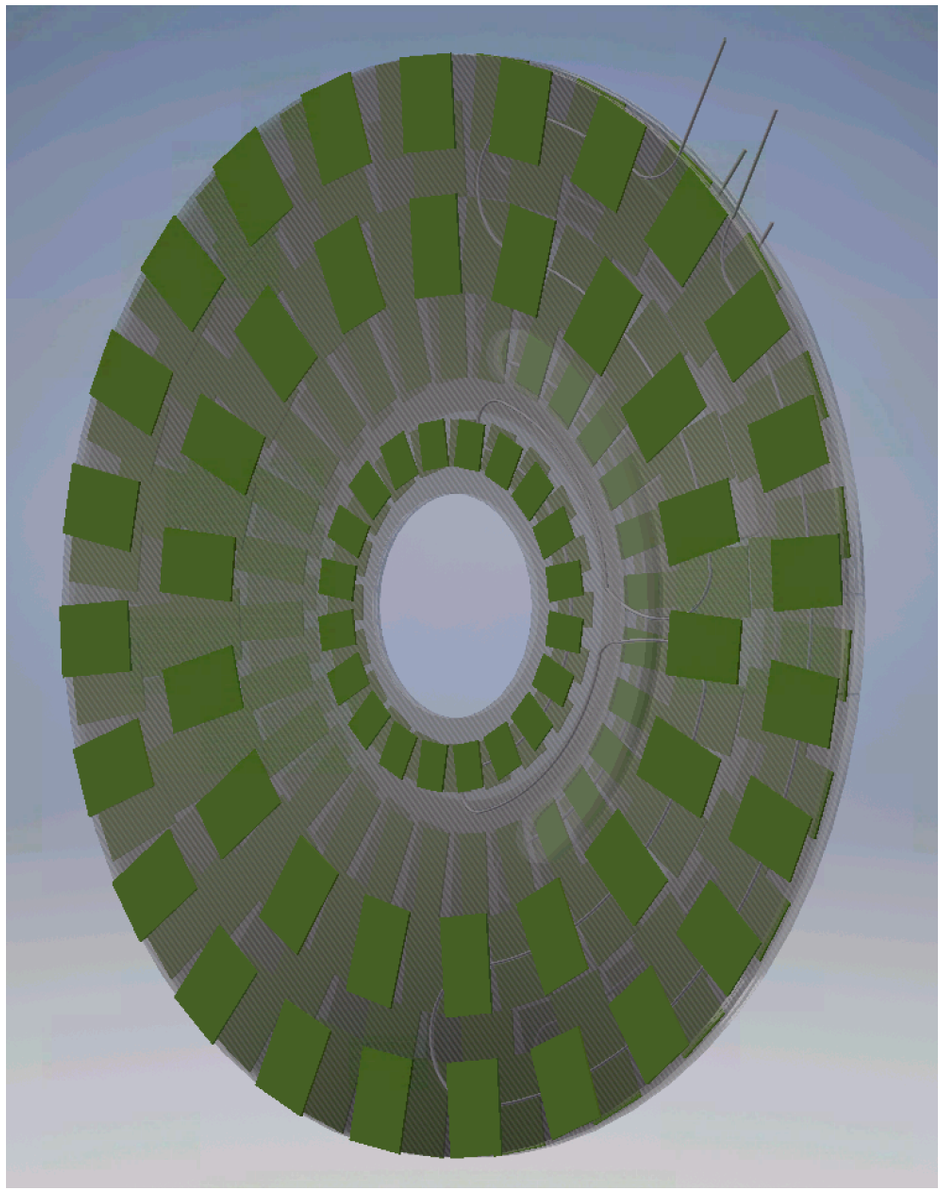
TEPX Thermal modelling

Outline

- First look on thermal analysis on TEPX
- Start with a drawing of a TEPX disk
  - consider a geometry with
    - ring 1 - 1x1 modules
    - ring 2 - 1x2 modules
    - rings 3/4/5 - 2x2 modules
  - cooling loop shape adapted from TFPX





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Input

- For the thermal simulation
  - single odd dee
- Input data
  - constant temperature of -22°C in the pipes
    - stainless steel K = 15 W/mK
  - pixel Sensor 150µm silicon K=148 W/mK
  - high conductivity carbon fibre 500µm, Kxy = 250 and Kz = 1.5
  - TPG Kxy = 1000, Kz = 6
  - power considered for modules
    - ring 1 - 3.1 W
    - ring 2 - 6.1 W
    - ring 3/4/5 - 12.3 W

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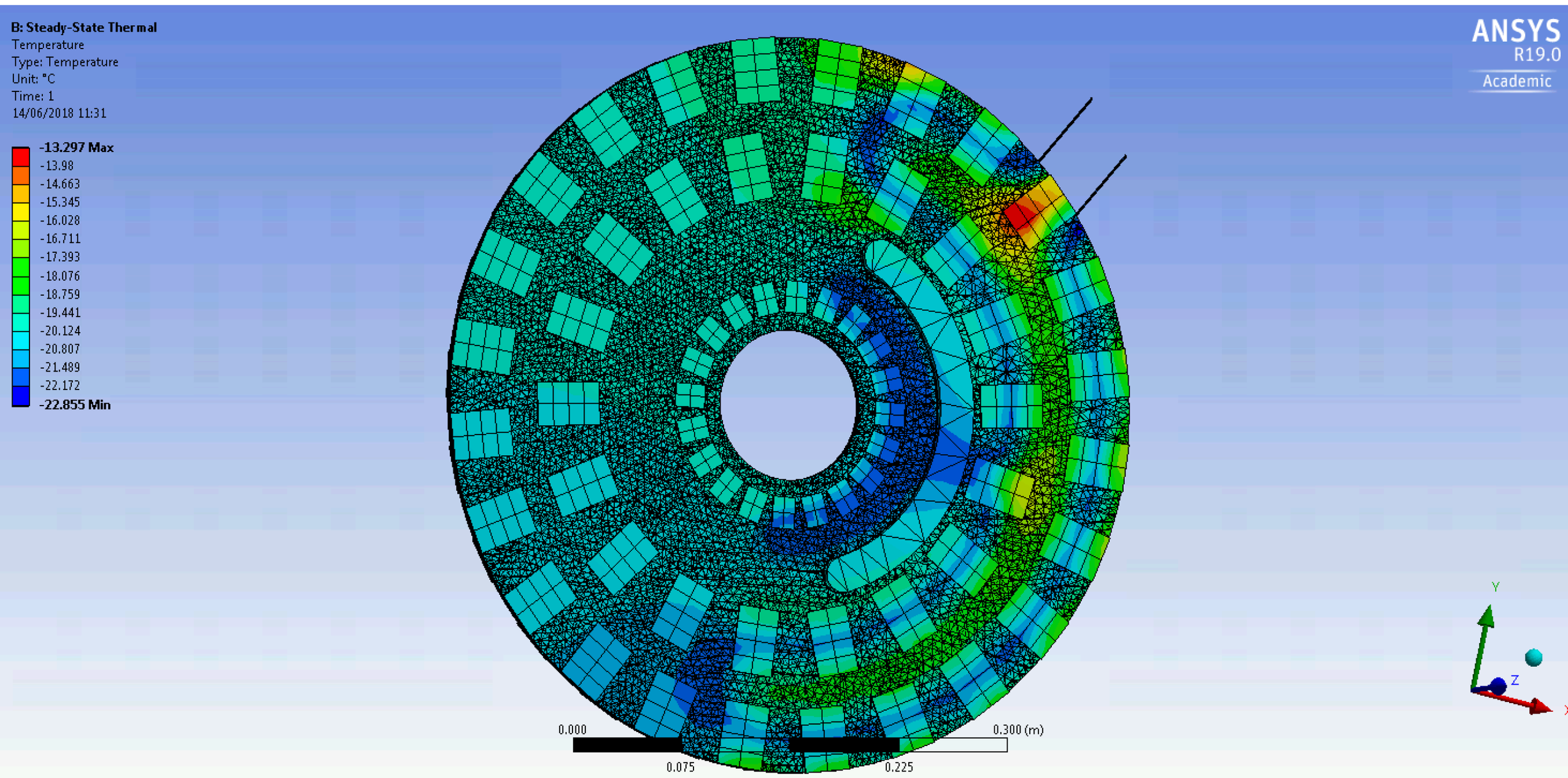
Result



- Min T = -22.9°C
- Max T = -13.3°C