assignment04

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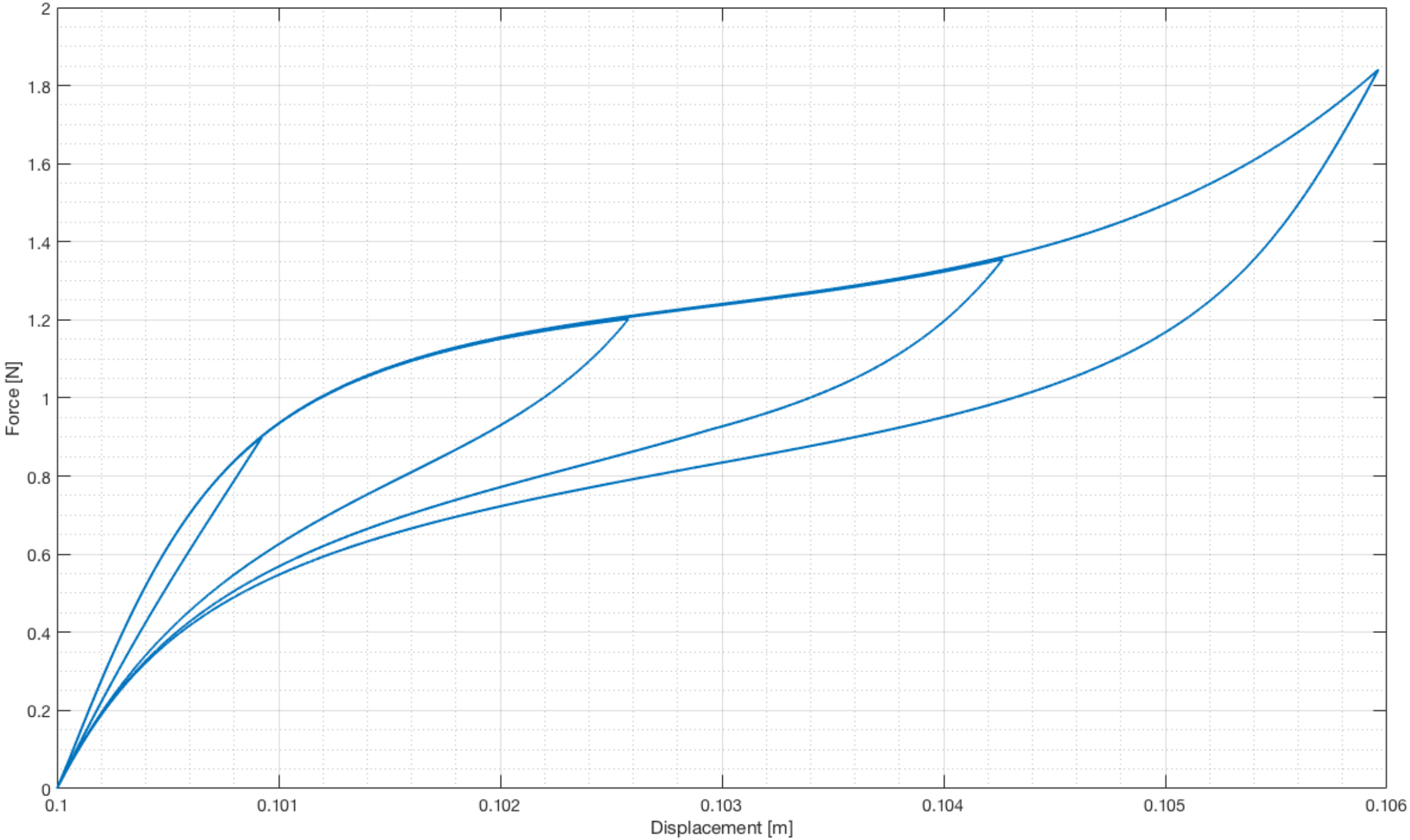
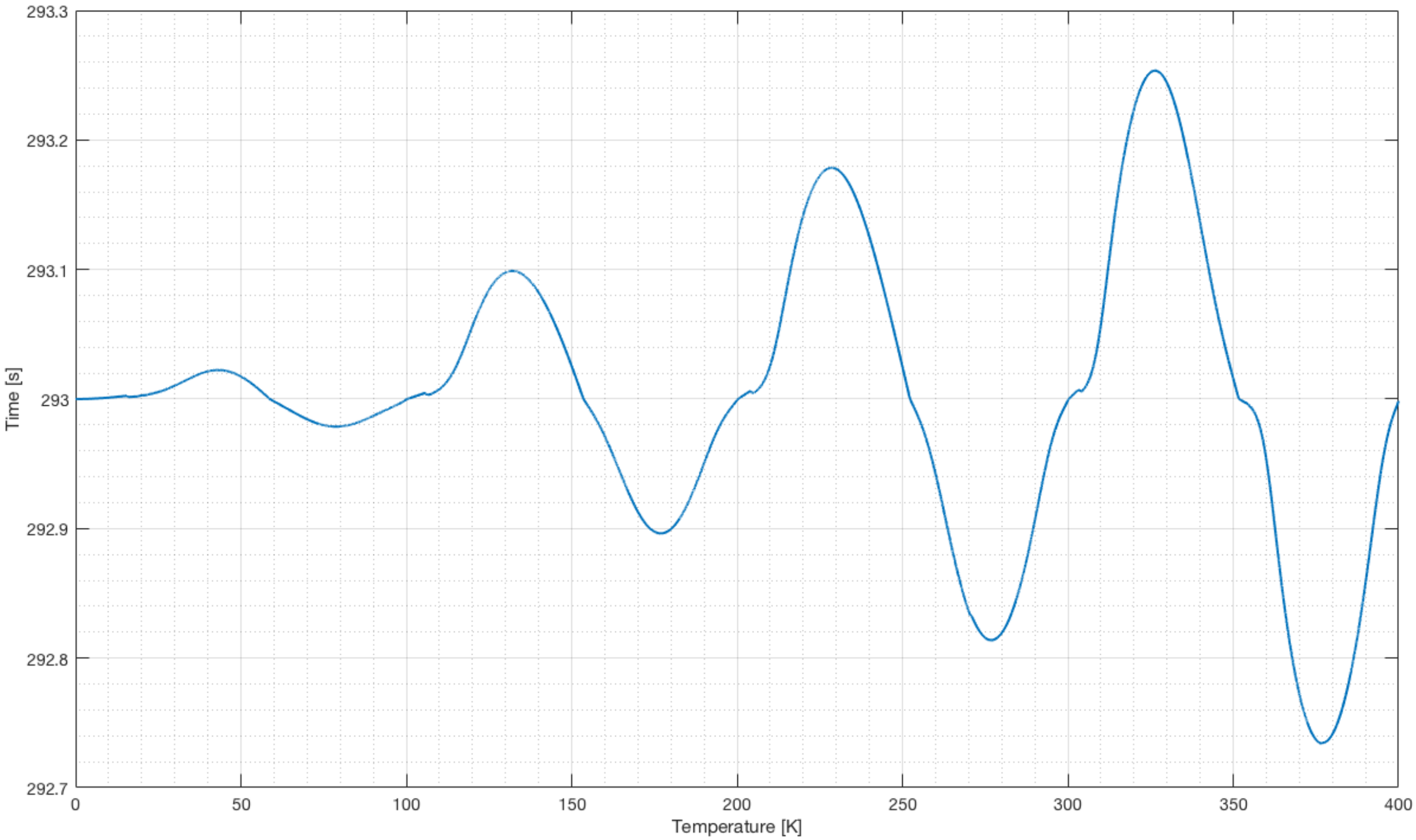
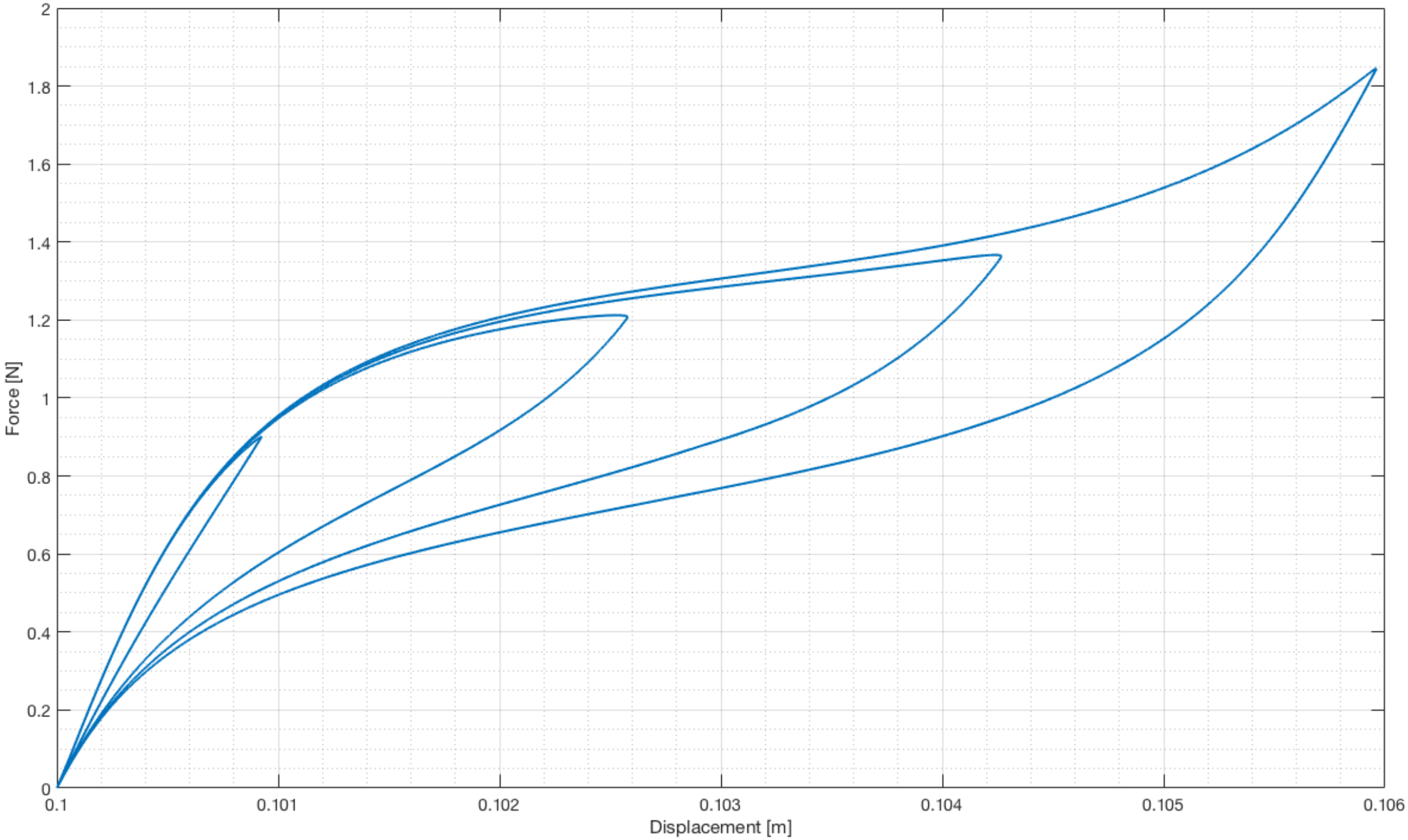
Exercise 1a (PC) $f=0.01Hz$



Exercise 1a (PC) $f=0.01Hz$



Exercise 1a (PC) $f=0.1Hz$



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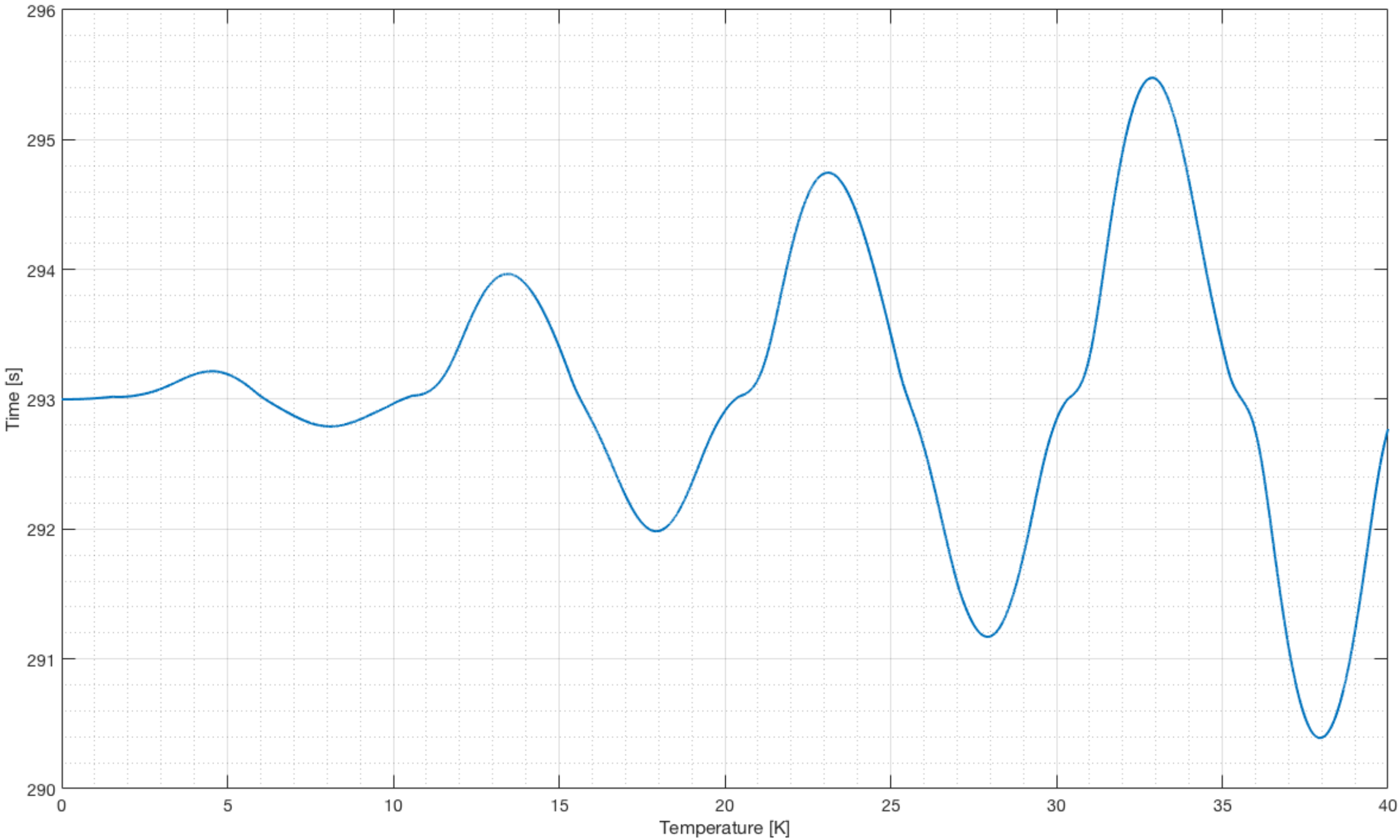

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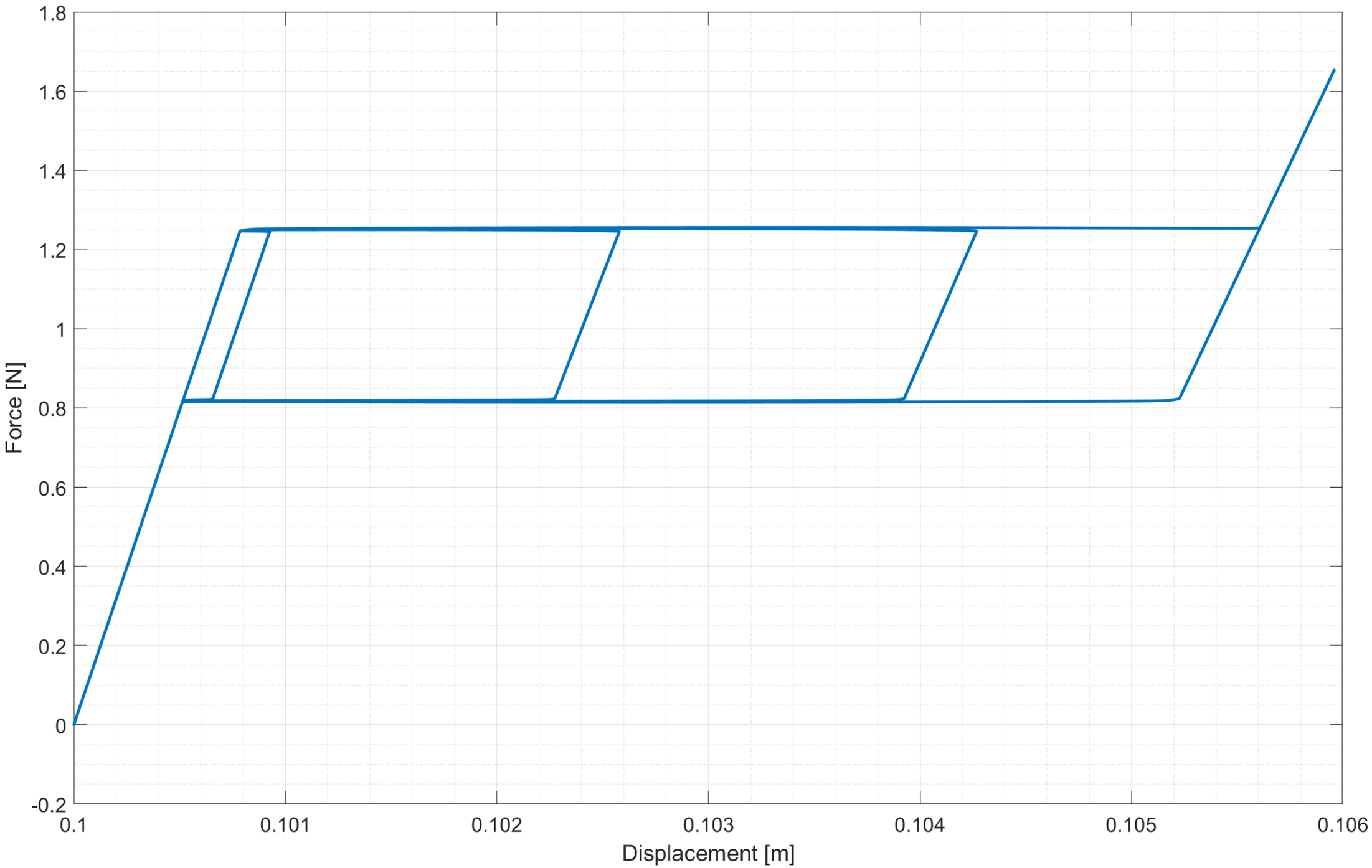
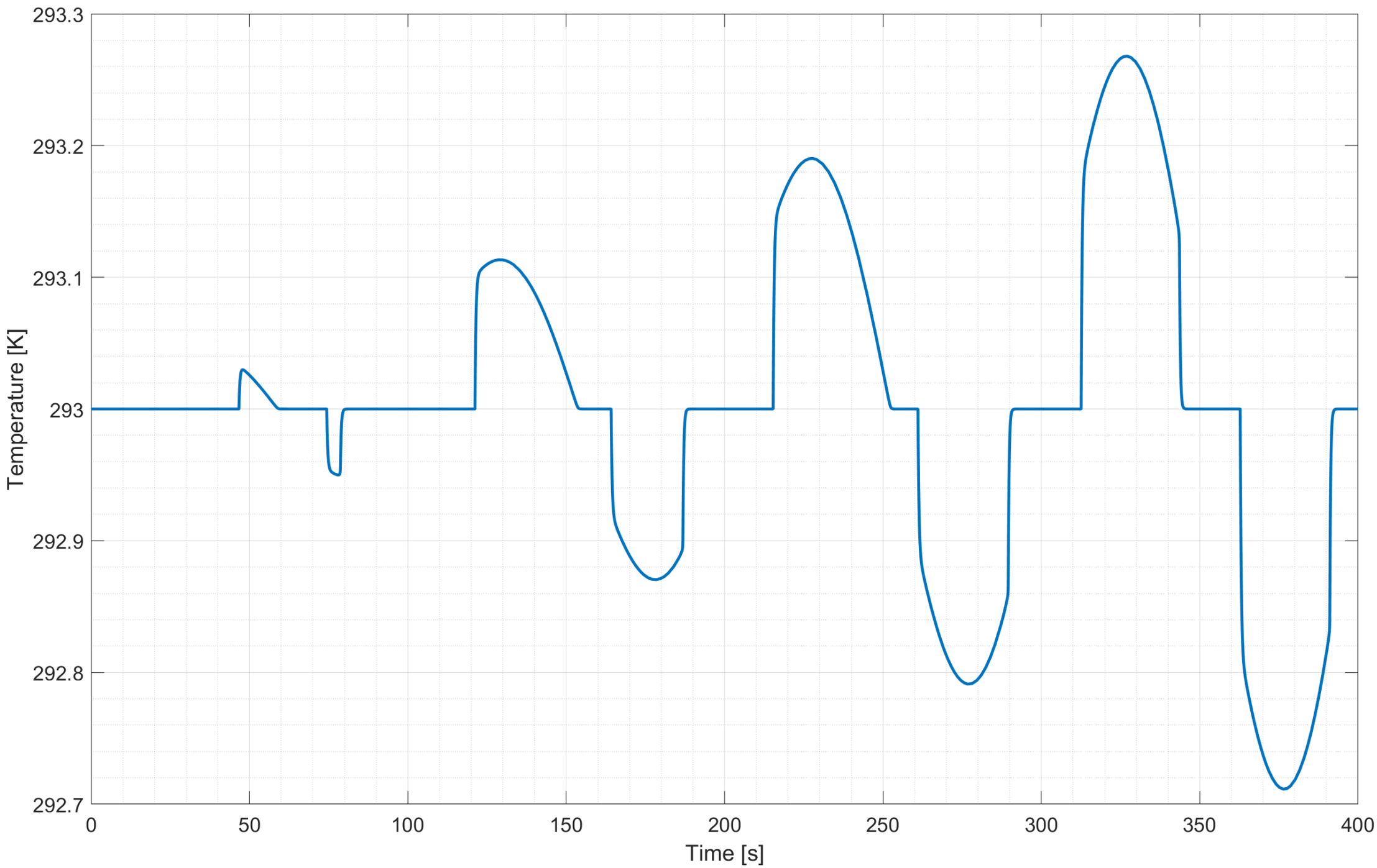


Exercise 1a $f=0.01Hz$



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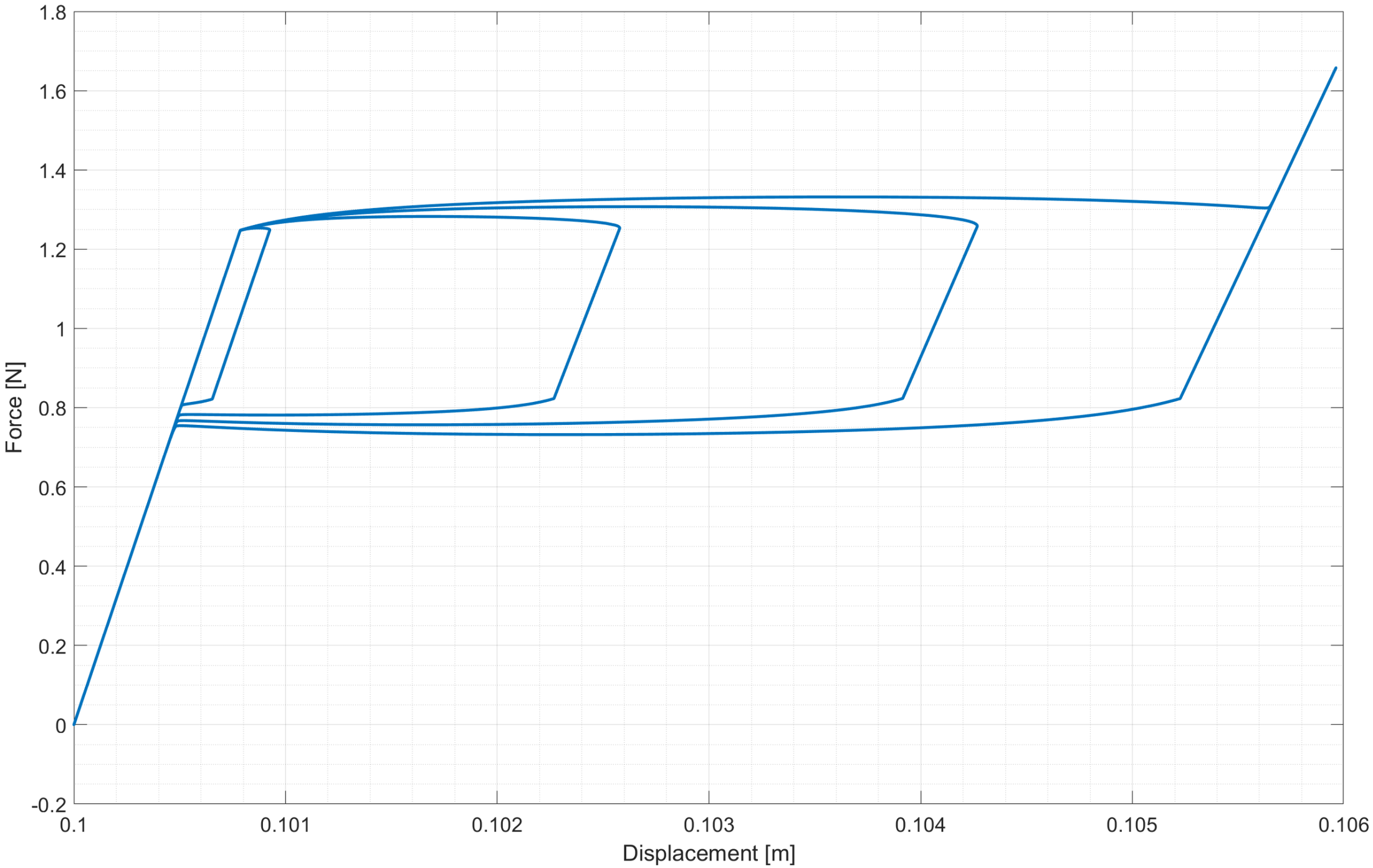

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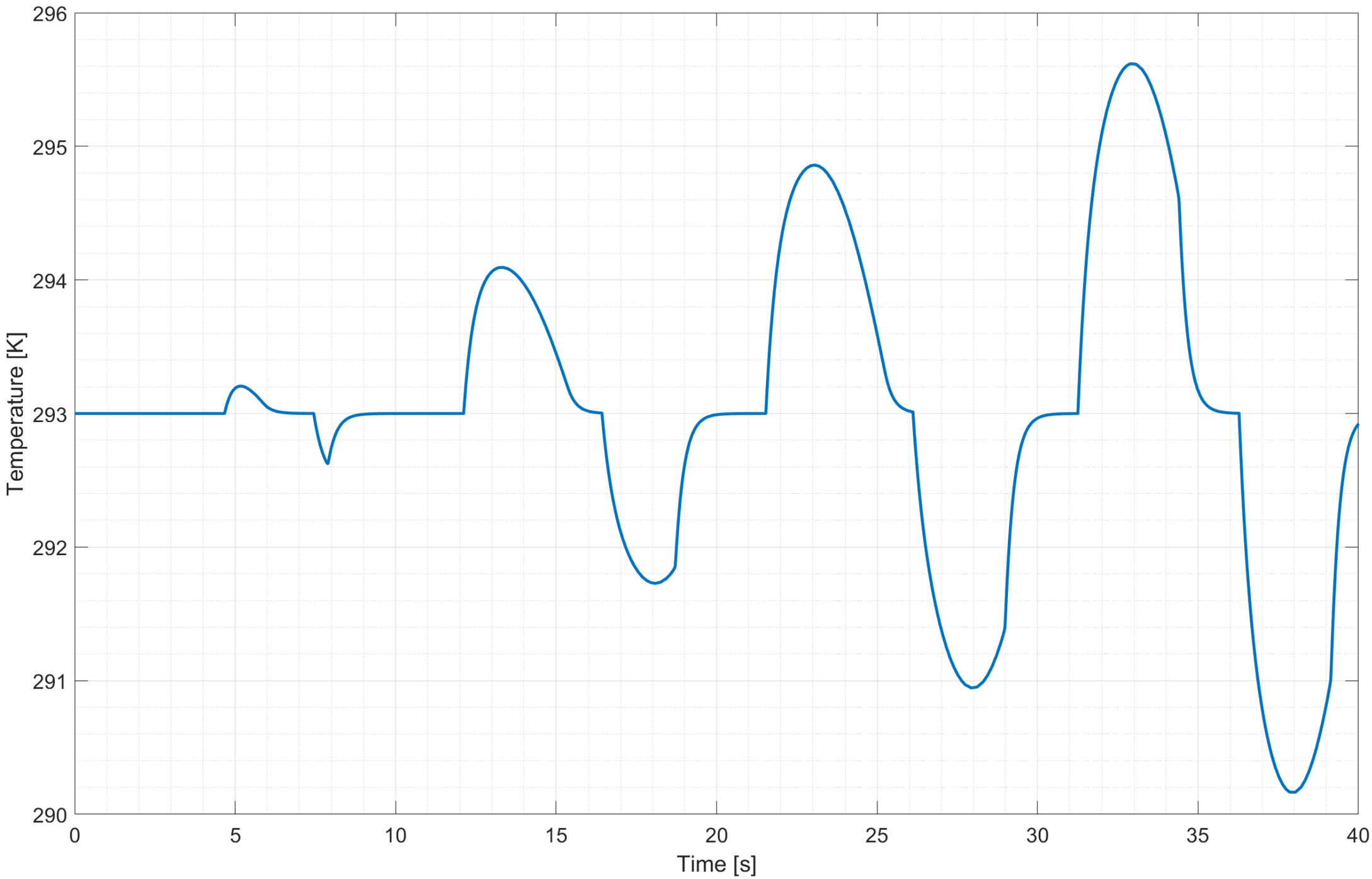


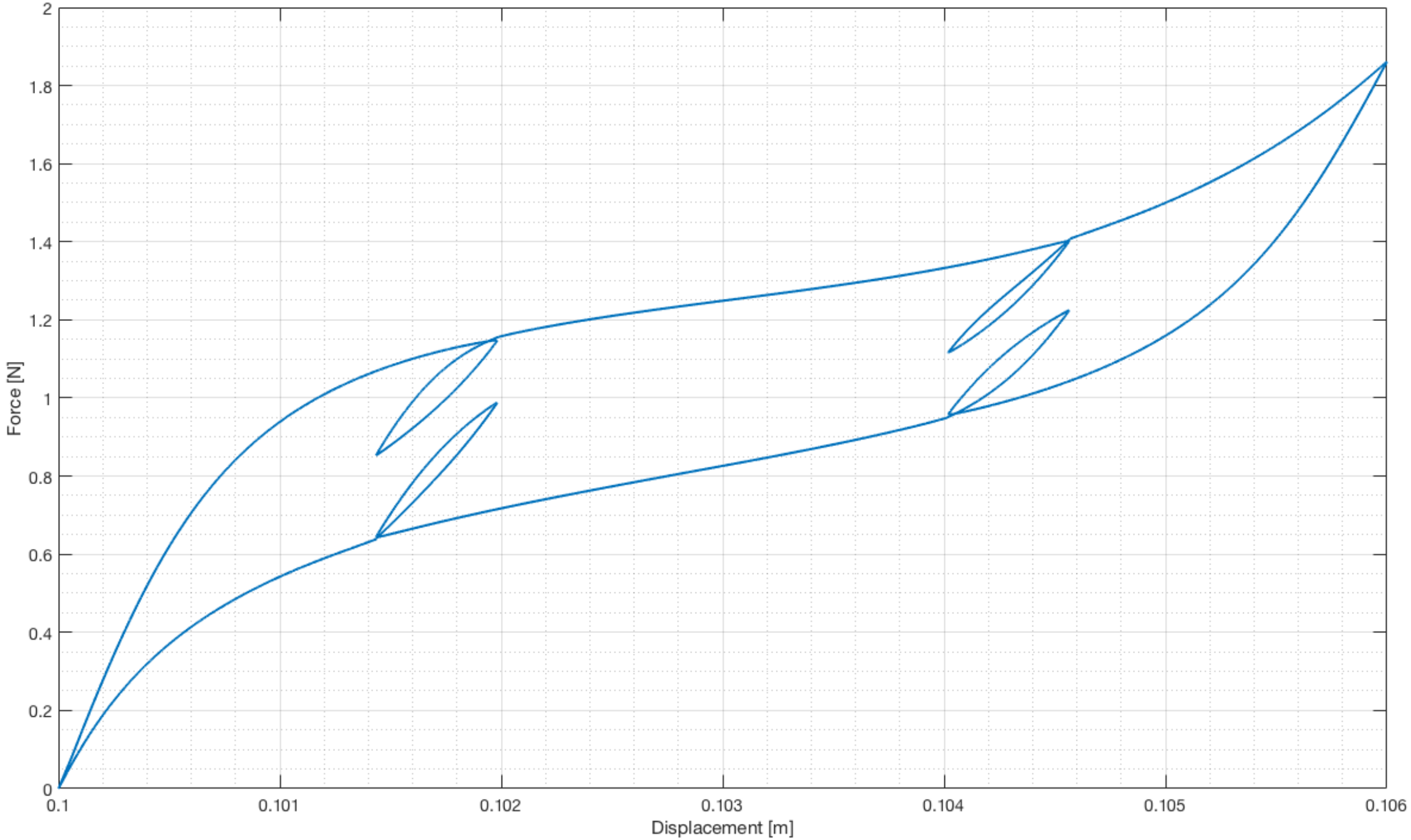
1a Comments

- first off: the obvious difference between polycrstalline (PC) and monocrytsalline SMA wires is the curvature of the graph.
  The undefined corners of the PC graph are results of the many different grid orientations switching their state at different points in time

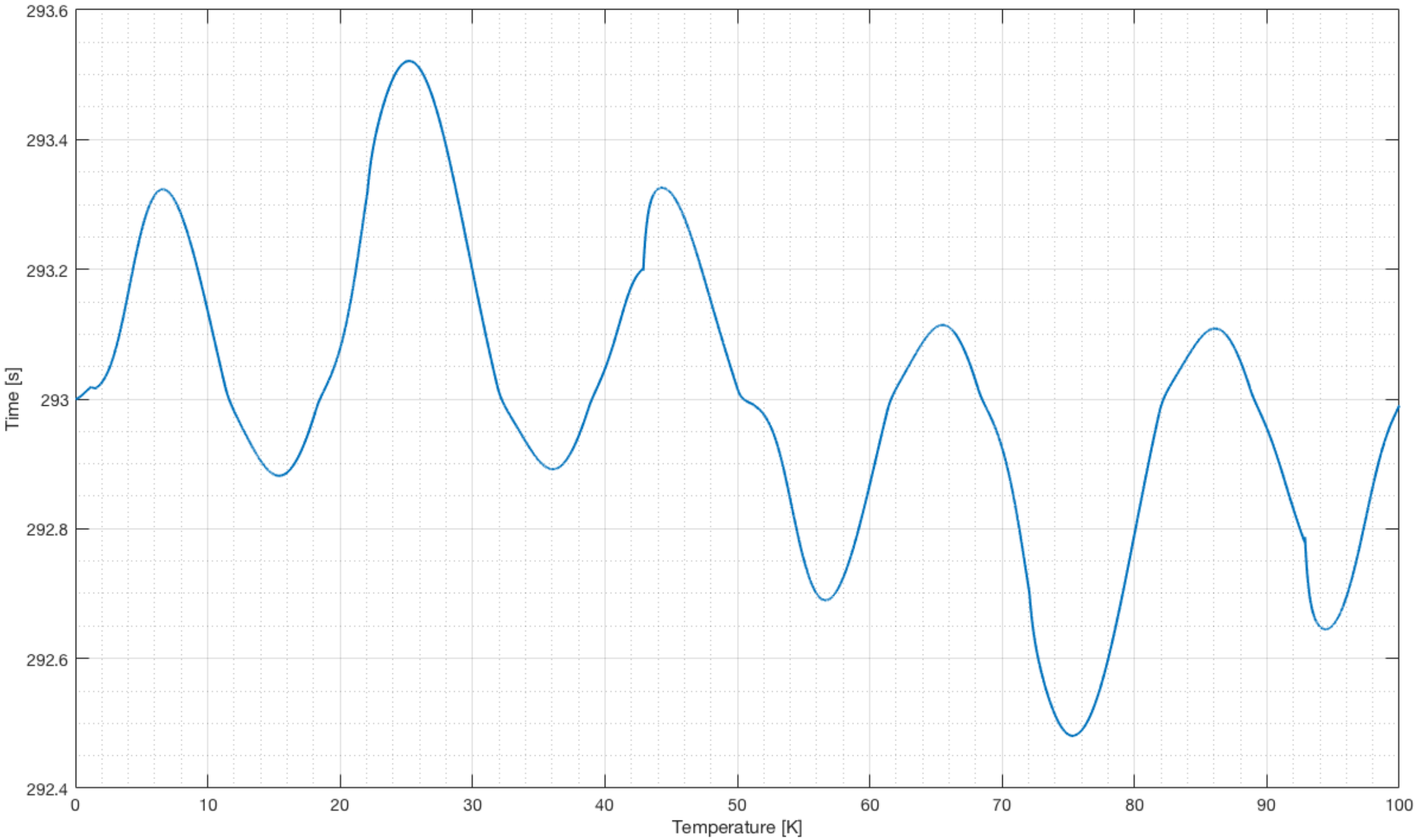
- additionally the temperature amplitude is larger if the frequency is higher

- the PC and non PC temperature graphs are about the same with one difference: the non PC graph has some plateaus at the "zero-level" caused by the defined transformation from one state to the other

Exercise 1b (PC) $f=0.01Hz$



Exercise 1b (PC) $f=0.01Hz$



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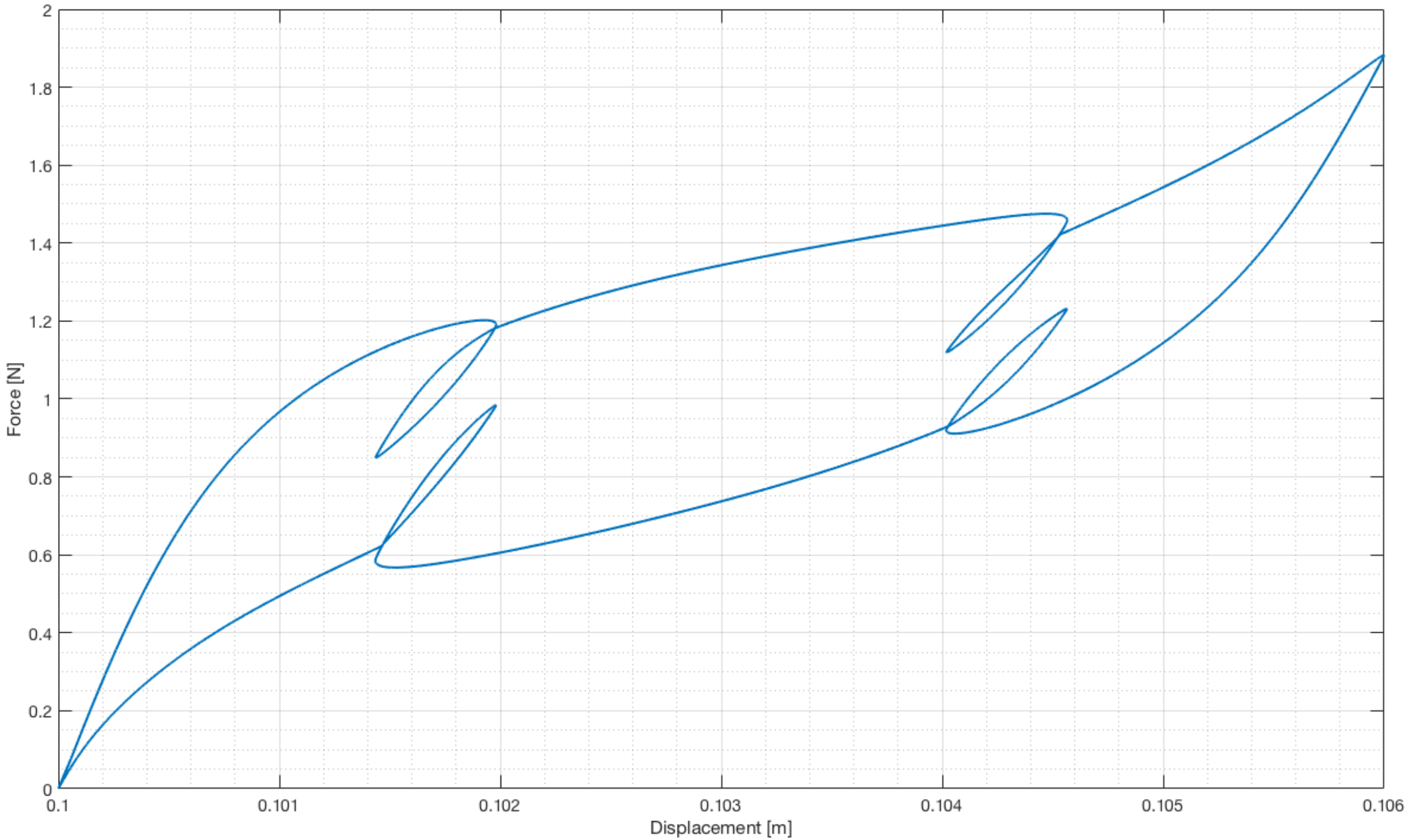

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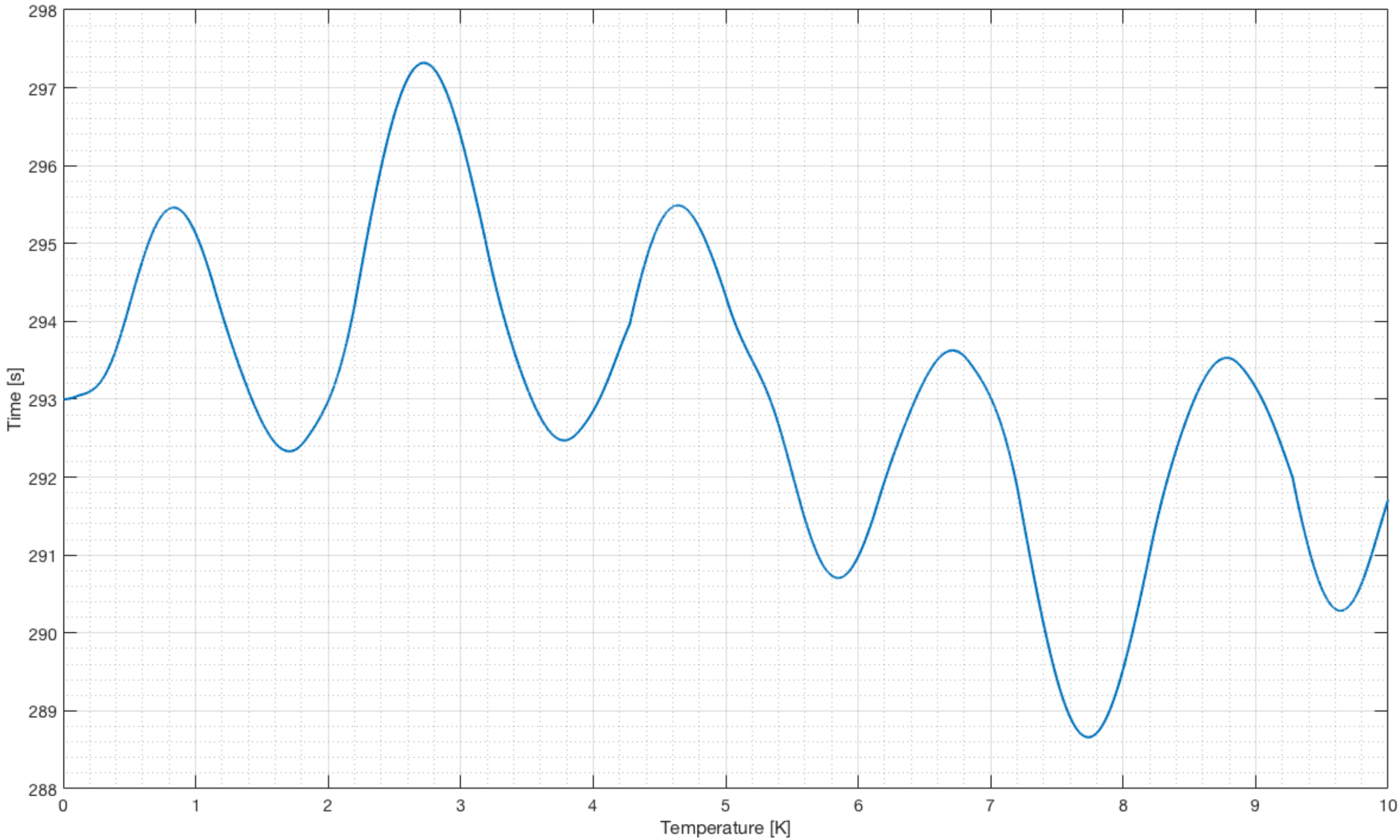
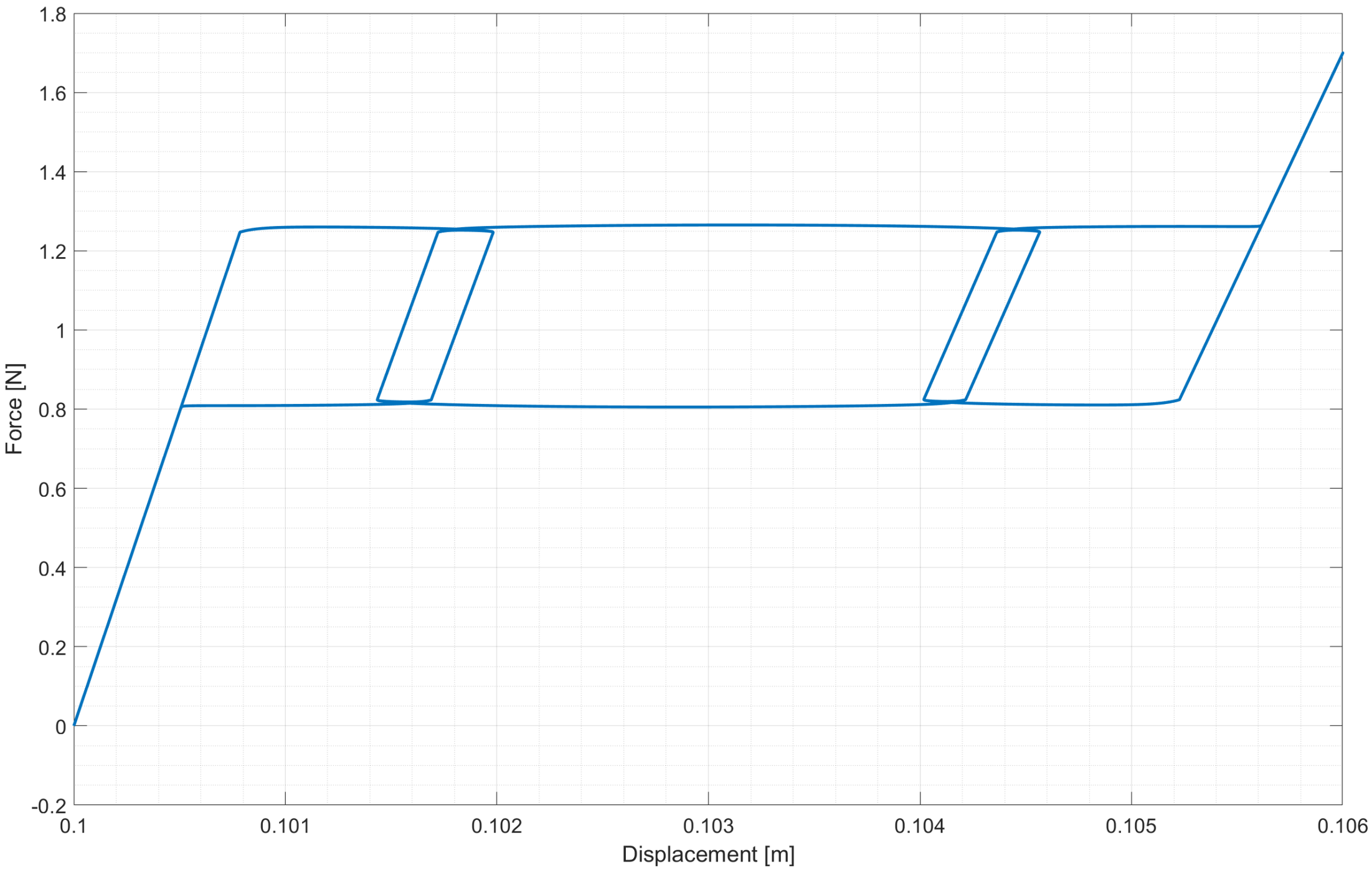


Exercise 1b $f=0.01Hz$



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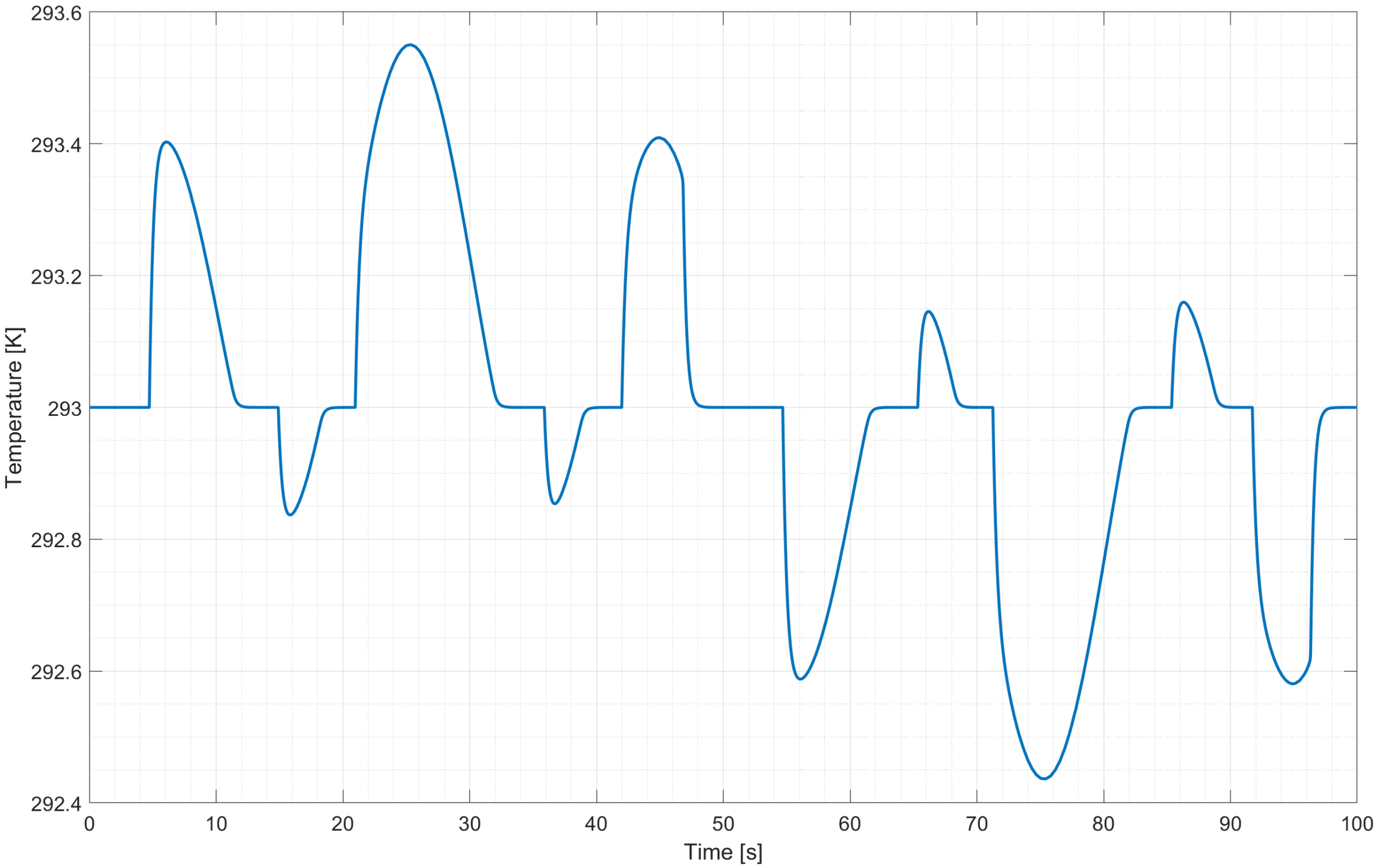
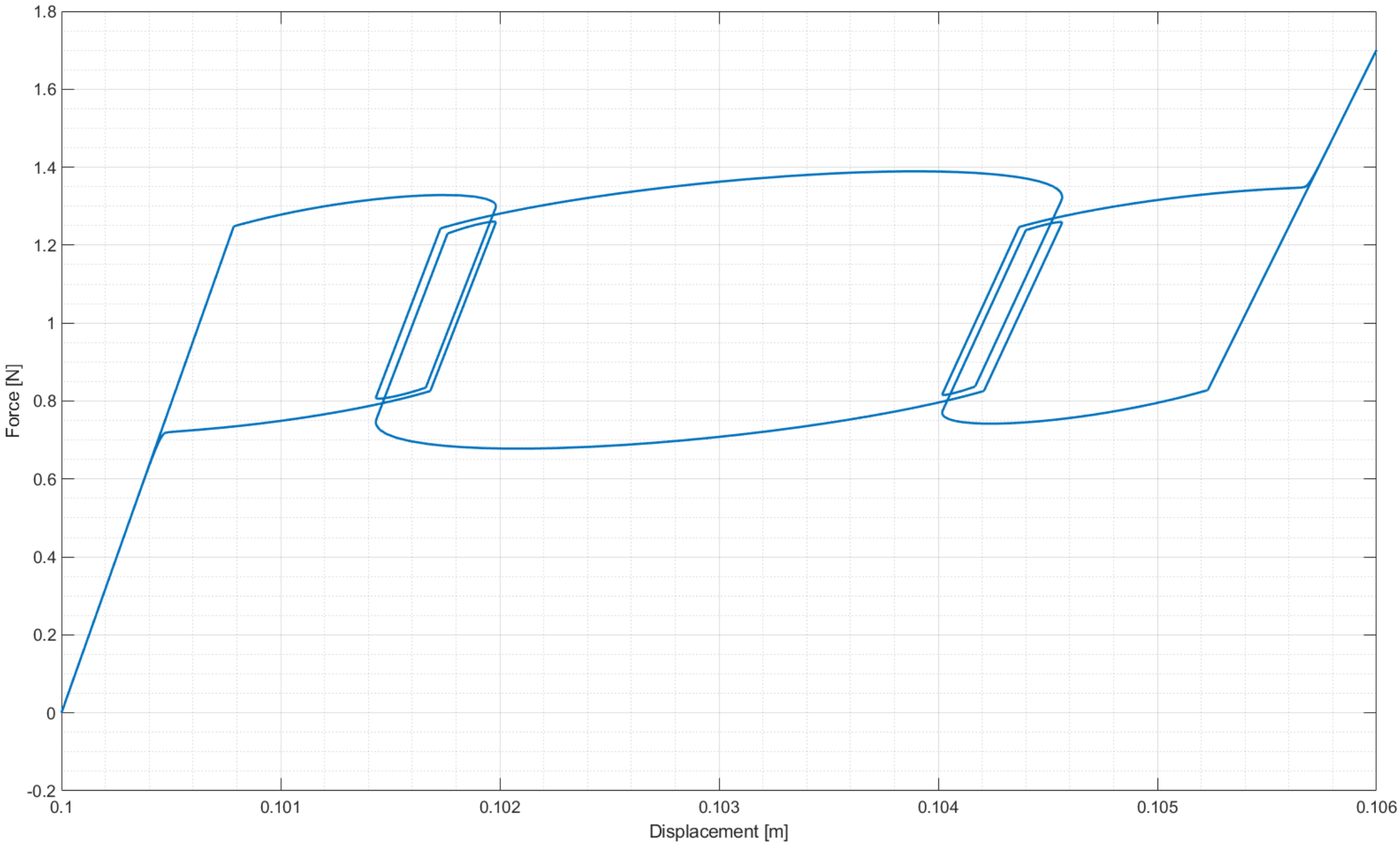


Exercise 1b $f=0.1Hz$



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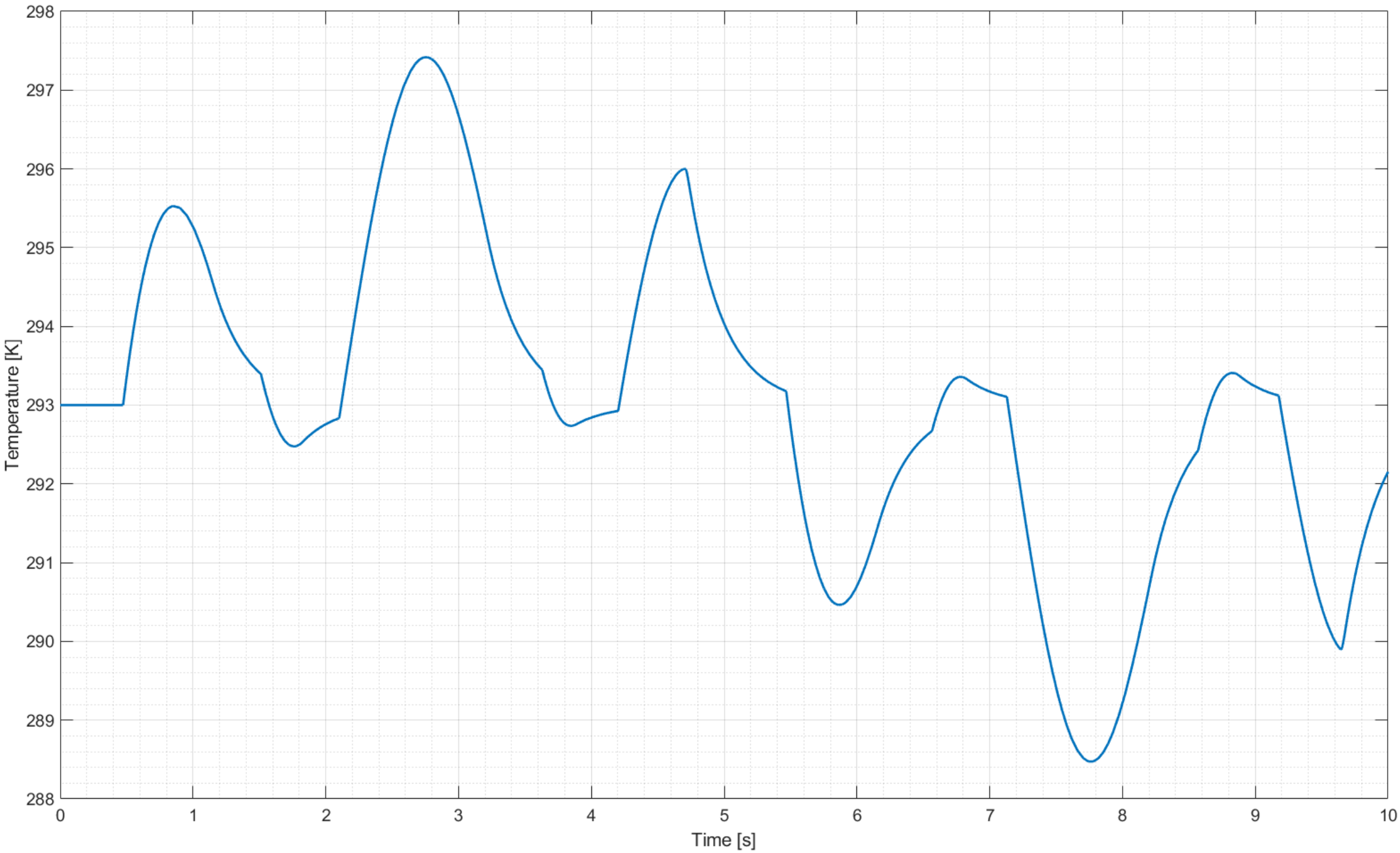
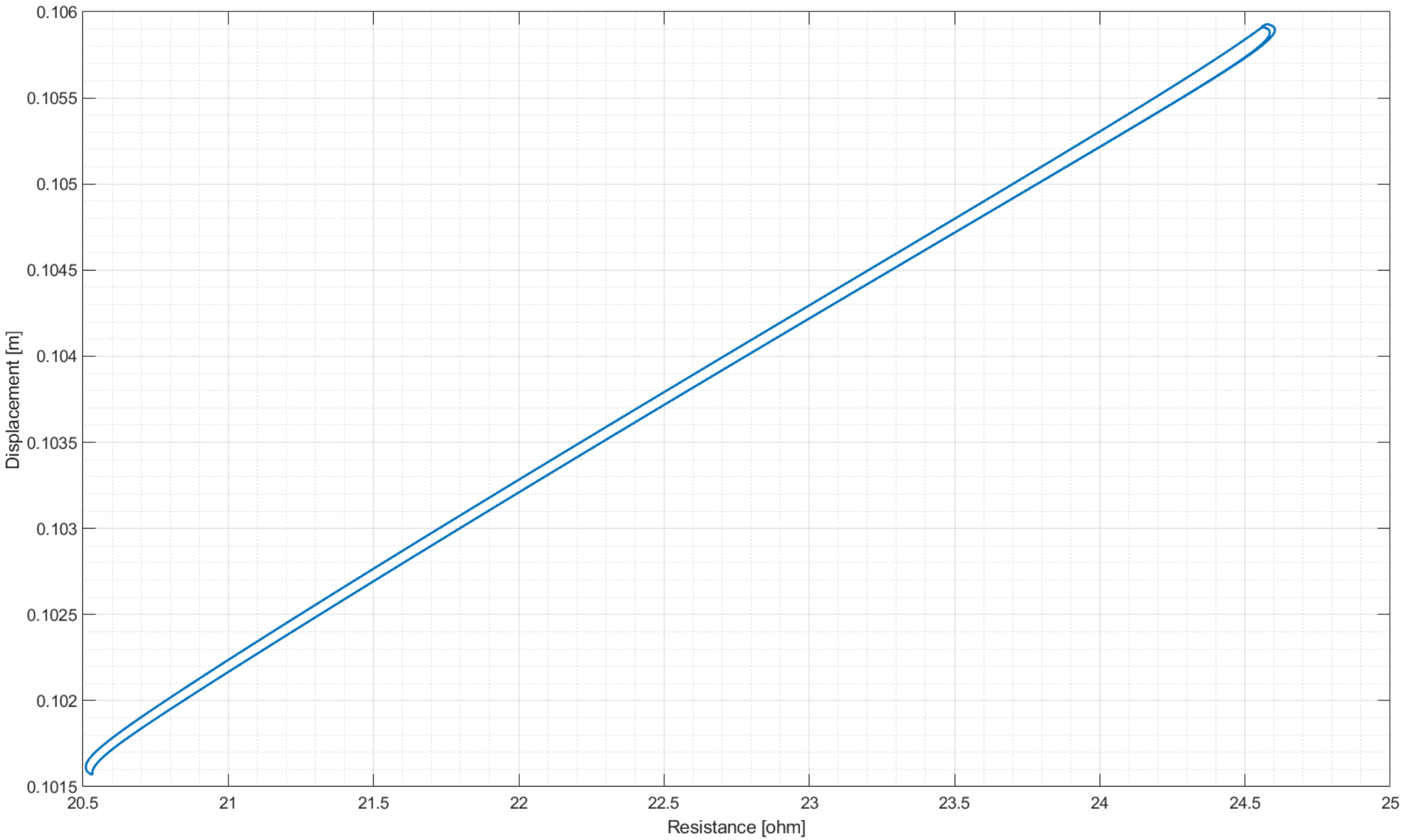


1b Comments

- a striking difference is noticeable if you compare the inner loops
  the PC inner loops is like a mini hysteresis inside of the big one with a partial transformation
  the non PC inner loops jump from one state to the other and are therefore preventing the 'typical' inner loop

2 SMA sping (PC) - $f=0.1Hz$



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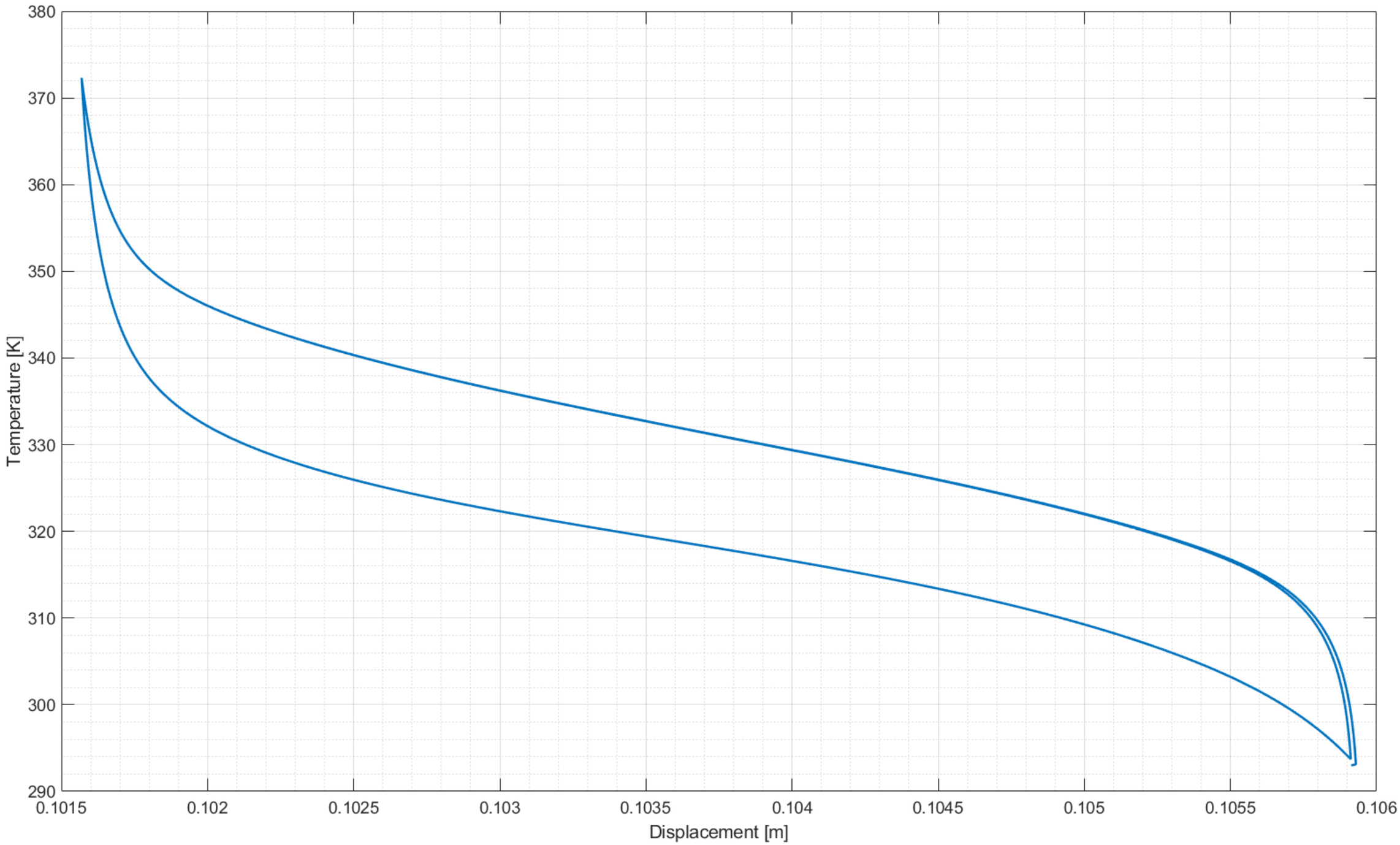

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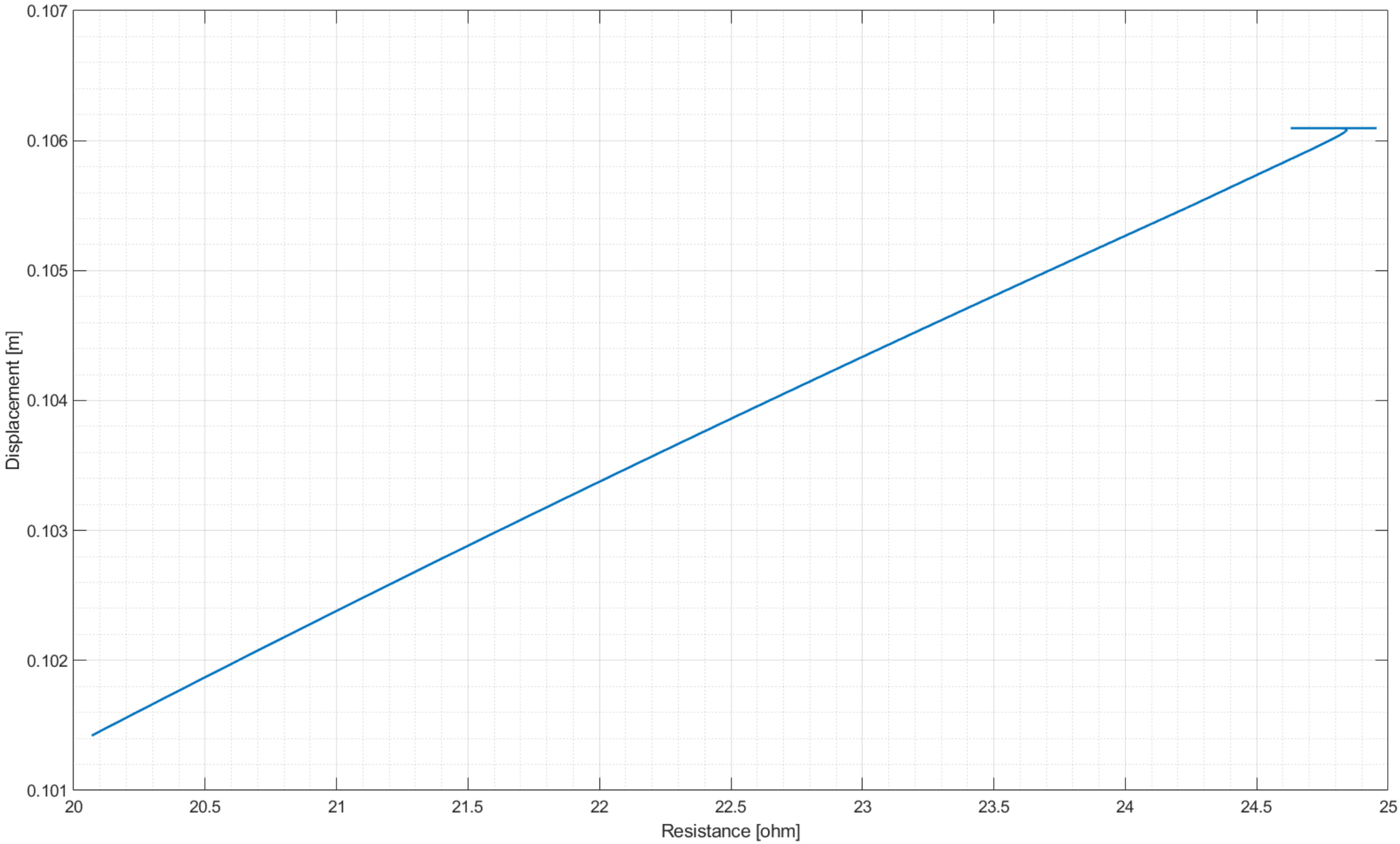

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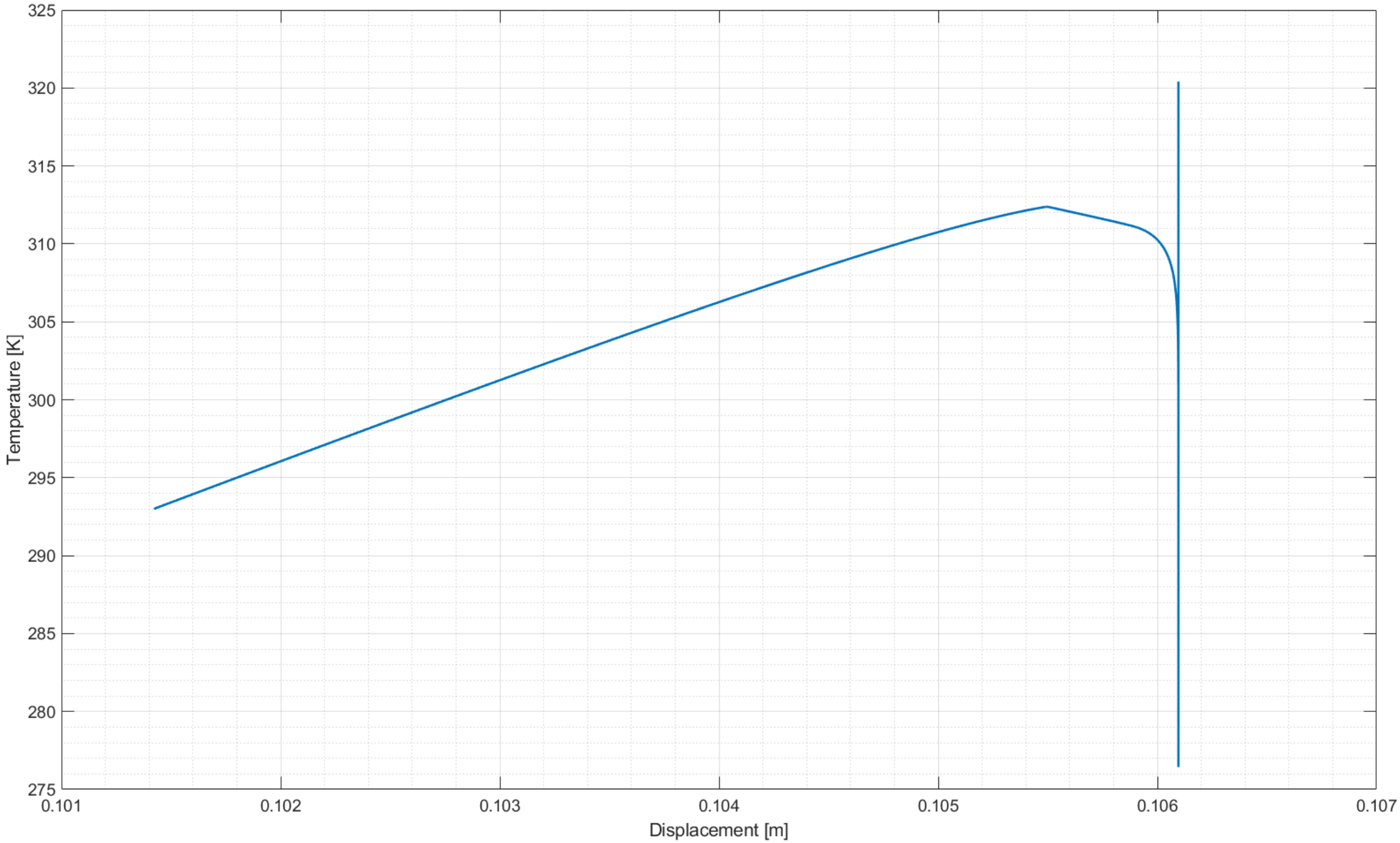

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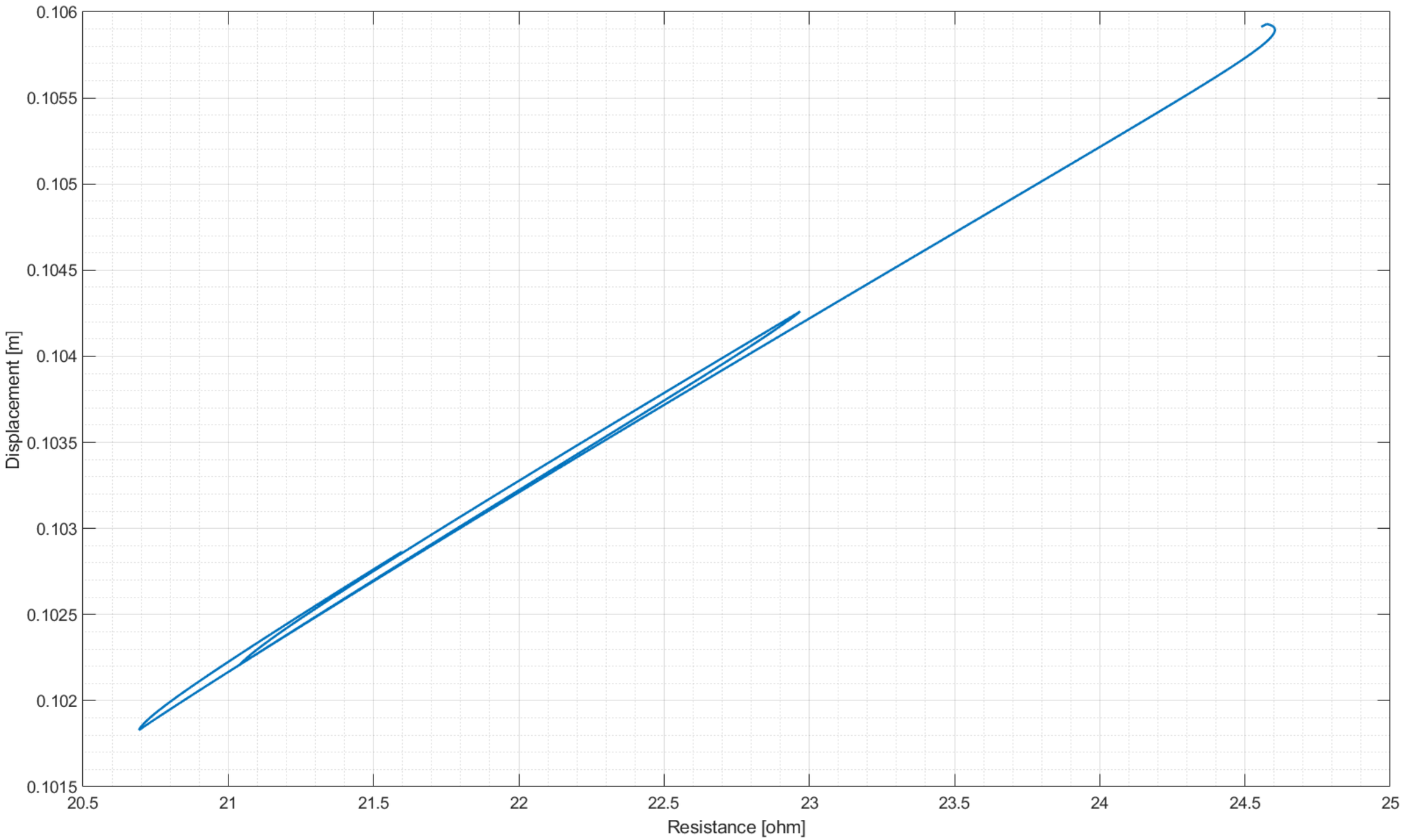

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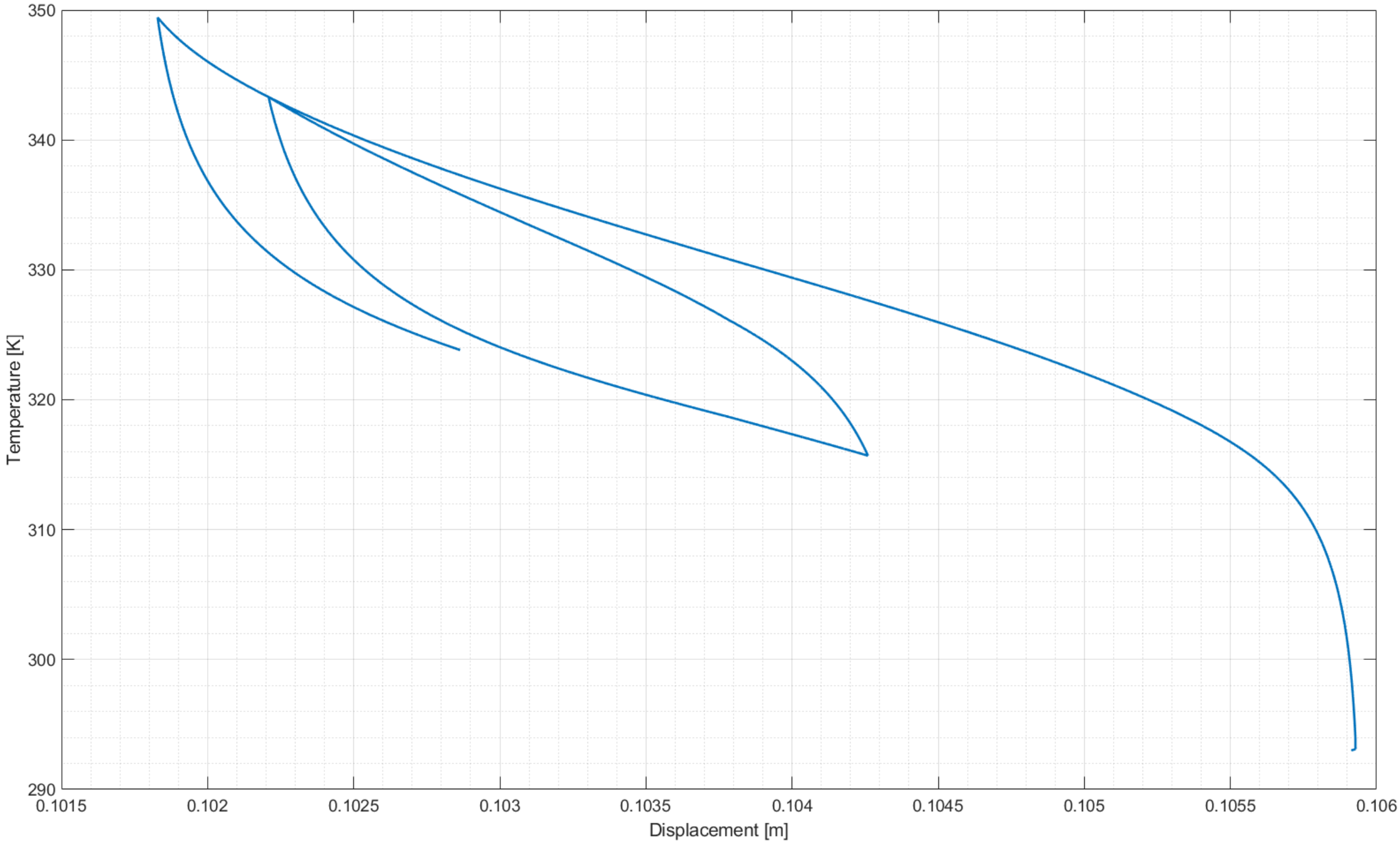

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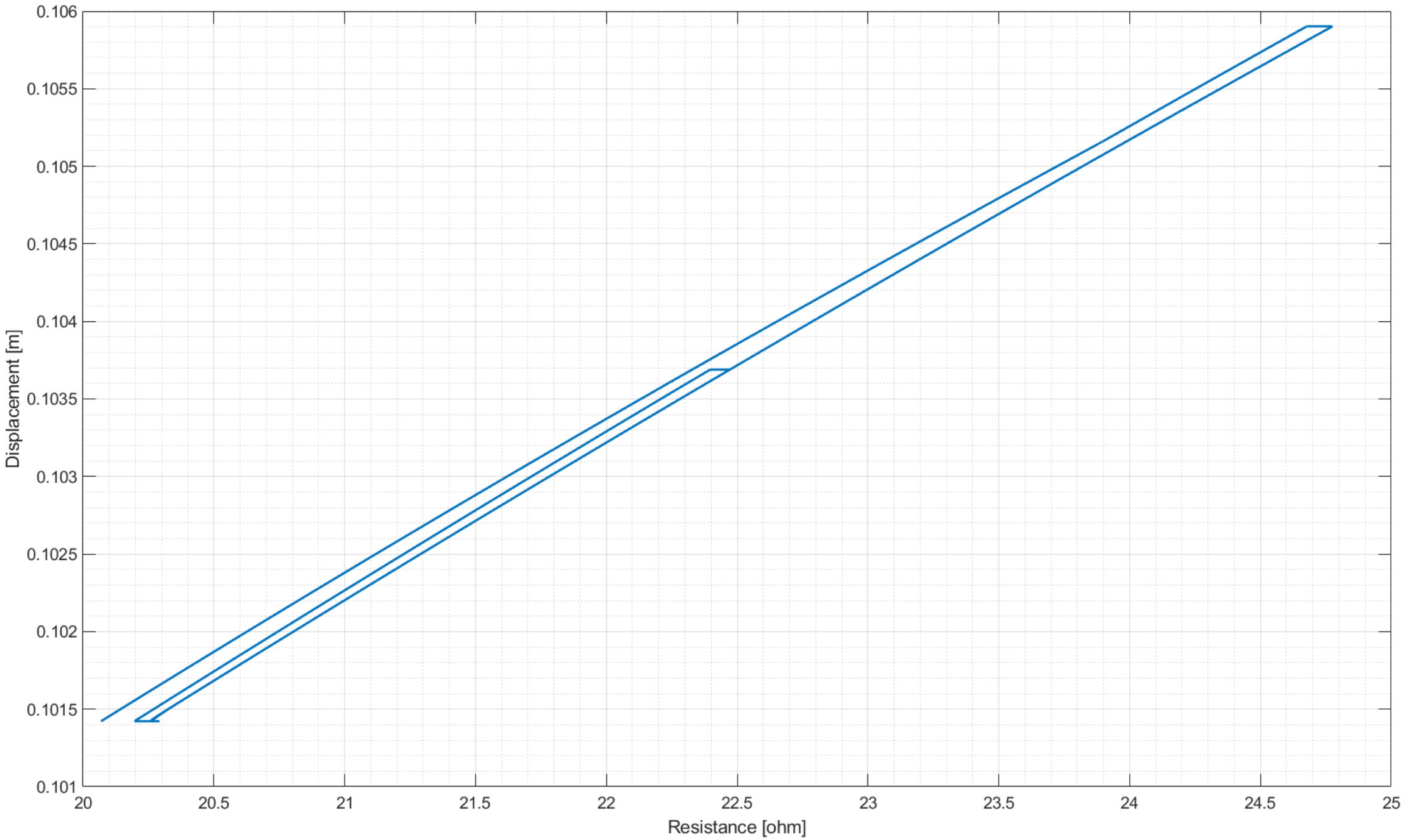

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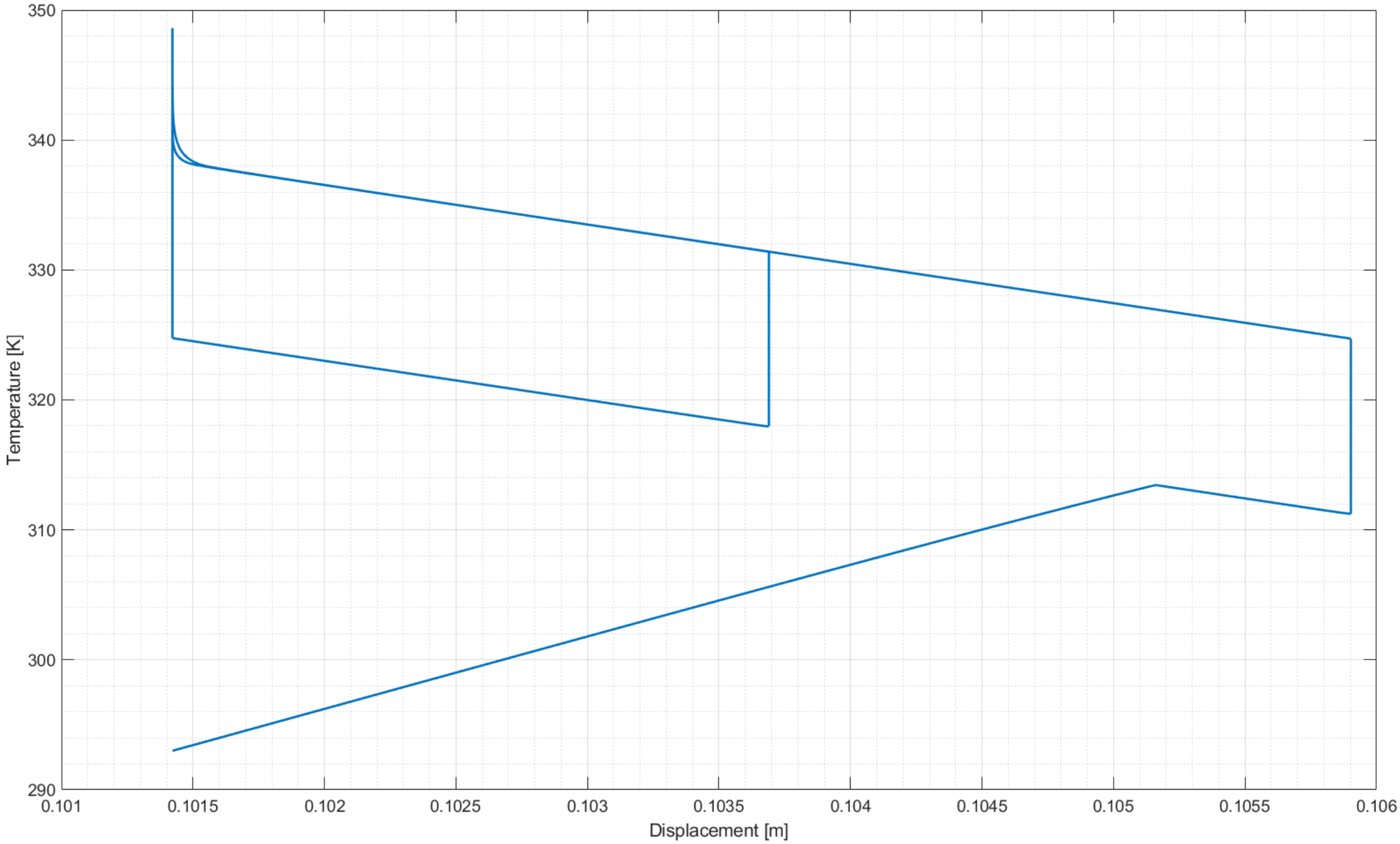

2 Comments

- the displacement resistance correlation is about linear
- the PC wire with sping has a typical temperature-displacement graph under load with the spring
- the non PC wire has some unexplainable lines