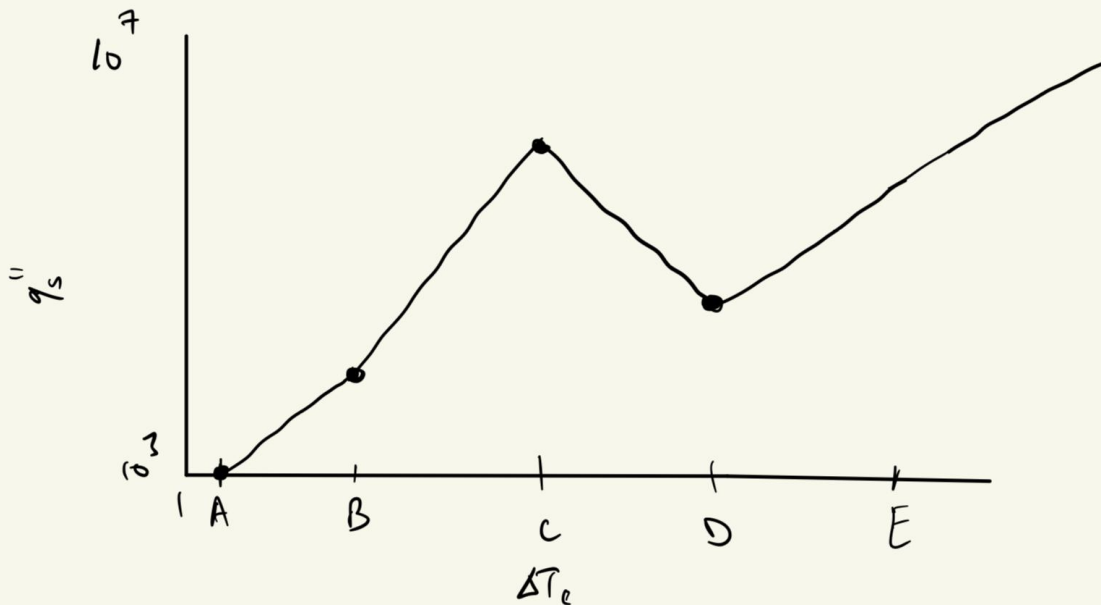


Boiling Regimes



Variables:

- $XA = x$ value of A
- $XB = x$ value of B
- $XC = x$ value of C
- $XD = x$ value of D
- $XE = x$ value of E
- $YA = y$ value of A
- $YB = y$ value of B
- $YC = y$ value of C
- $YD = y$ value of D
- $YE = y$ value of E
- $mAB = \text{slope from point A to B}$
- $mBC = \text{slope from point B to C}$
- $mCD = \text{slope from point C to D}$
- $mDE = \text{slope from point D to E}$
- $xEst = \text{excess temperature}$
- $yEst = \text{surface heat flux approximation}$

Sequence of steps:

- Ask for values of $xEST$, and turn them into floats

- Assign variable values (XA, XB, XC, XD, XE, YA, YB, YC, YD, XE)
- Calculate the slope using $m = \log(Y1 / Y0) / \log(X1/X0)$
 - Separate into point segments
- Calculate the surface heat flux using $y = Y0 (xEst / X0)^m$ and functions
 - Create if statements to know which slope to use
- Print statement

Test cases:

- Typical 1:
 - Excess temperature: 30
 - Output: The surface heat flux is approximately 1500000 W/m²
- Typical 2:
 - Excess temperature: 15
 - Output: The surface heat flux is approximately 188079 W/m²
- Typical 3:
 - Excess temperature: 6
 - Output: The surface heat flux is approximately 12086 W/m²
- Typical 4:
 - Excess temperature: 79
 - Output: The surface heat flux is approximately 85931 W/m²
- Typical 5:
 - Excess temperature: 400
 - Output: The surface heat flux is approximately 212666 W/m²
- Typical 6:
 - Excess temperature: 1000
 - Output: The surface heat flux is approximately 1084664 W/m²
- Typical 7:
 - Excess temperature: 148
 - Output: The surface heat flux is approximately 36299 W/m²
- Edge 8:
 - Excess temperature: -10
 - Output: Surface heat flux is not available
- Edge 9:
 - Excess temperature: 2000
 - Output: Surface heat flux is not available
- Edge 10:
 - Excess temperature: 0
 - Output: Surface heat flux is not available