Modelling as a Core Activity

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Abstract

This is a short abstract outlining the scope and findings in this work.

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1 Introduction

Linear models can be represented as follows:

$$\dot{\mathbf{x}} = \mathbf{A}\mathbf{x} + \mathbf{B}\mathbf{u} \tag{1}$$

2 Thermodynamics

In thermodynamics Gibbs [1] is an eponym which takes its name from from Josiah Willard Gibbs. Gibbs -energy is defined as:

$$G := U - TS - \pi V$$

3 Numerical Methods

```
1  def nr(f,dfdx,x0,tol=1e-12,maxit=13):
2    """ 1D Newton-Raphson solver """
3    xk=x0; iflag=False; cflag=False; i=1
4    while not iflag:
5      xkp1 = xk - f(xk)/dfdx(xk) # NR step
6      cflag = abs(xkp1 - xk) <= tol
7      if not cflag:
8          xk = xkp1; i += 1
9          iflag = i > maxit
10         continue
11     return xk
12   return xk
```

Listing 1: The "Newton-step" is performed in Line 5

[1] Josiah Willard Gibbs: American scientist who made important theoretical contributions to physics, chemistry, and mathematics.

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