Appendix 1

$A = KD\mu N = \kappa\, f(t)$ 1

Where K may depend on the half-life of SARS-CoV-2 and the dew point.

Consider following relationship*

$\mu = \left(\frac{\partial H}{\partial Ni}\right) S, P, V = \frac{\Delta H}{\Delta Ni} = \frac{Q}{N}$ 1.1

From equation (1) and (1.1)

$A = KDQ$ 1.2

Q is the heat exchange due to temperature difference

The quantity Q is defined by the following quadratic equation

$Q = \sigma[t - 0.5(t - T + 1)^2]$ 1.3

Where σ is a constant

If $f(t) = [t - 0.5(t - T + 1)^2]$ 1.4

From equation (1), (1.3) and (1.4)

$A = KD\sigma\, f(t)$ 1.5

Let $K\sigma = \alpha$ 1.6

$A = \alpha D[t - 0.5(t - T + 1)^2]$ 2

Similarly, we can write following relationship for the equation (3) in the text

$Q = \eta[\Lambda - e^{\varphi(t-T)}]$ 1.7

Say $f(t) = [\Lambda - e^{\varphi(t-T)}]$ 1.8

From equation (1), (1.7) and (1.8)

$A = KD\eta f(t)$ 1.9

If $\beta = K\eta$

$A = \beta D[\Lambda - e^{\varphi(t-T)}]$ 3

* Equation (1.1) is applied for a single SARS-CoV-2 molecule and therefore entropy, pressure and volume remain unchanged. We also assume that all the molecules are identical and have same amount of heat exchange during a temperature change.

Note that the equation (1) , (2) and (3) refer to the same equations in the text.