Algebraic equations for the conservation relations

$[\text{Mad2}_\text{T}]=[\text{Mad2}]+[\text{Cdc20:C-Mad2}]+2\cdot[\text{Cdc20:C-Mad2:O-Mad2}]+[\text{Mad1:C-Mad2:O-Mad2}]+[\text{Cdc20:C-Mad2:p31}^\text{comet}]$

$[\text{Cdc20}_\text{T}]=[\text{Cdc20}]+[\text{Cdc20:C-Mad2}]+[\text{Cdc20:C-Mad2:O-Mad2}]+[\text{Cdc20:C-Mad2:p31}^\text{comet}]$

$[\text{Mad1:C-Mad2}_\text{T}]=[\text{Mad1:C-Mad2}]+[\text{Mad1:C-Mad2:O-Mad2}]$

$[\text{p31}_\text{T}^\text{comet}]=[\text{p31}^\text{comet}]+[\text{Cdc20:C-Mad2:p31}^\text{comet}]$

Rates

Reaction 1: $V_\text{bind}=k_\text{bind,on}[\text{Cdc20}][\text{O-Mad2}]-k_\text{bind,off}[\text{Cdc20:C-Mad2}]$

Reaction 2: $V_\text{m1,dim}=k_\text{dim,on}[\text{Mad1:C-Mad2}][\text{O-Mad2}]-k_\text{dim,off}[\text{Mad1:C-Mad2:O-Mad2}]$

Reaction 3: $V_\text{m1,cat}=k_\text{cat,on}[\text{Cdc20}][\text{Mad1:C-Mad1:O-Mad2}]-k_\text{cat,off}[\text{Cdc20:C-Mad2}][\text{Mad1:C-Mad2}]$

Reaction 4: $V_\text{dim}=k_\text{dim,on}[\text{Cdc20:C-Mad2}][\text{O-Mad2}]-k_\text{dim,off}[\text{Cdc20:C-Mad2:O-Mad2}]$

Reaction 5: $V_\text{cat}=k_\text{cat,on}[\text{Cdc20}][\text{Cdc20:C-Mad1:O-Mad2}]-k_\text{cat,off}[\text{Cdc20:C-Mad2}]^2$

Reaction 6: $V_\text{p31}=k_\text{bindp31,on}[\text{Cdc20:C-Mad2}][\text{p31}^\text{comet}]-k_\text{bindp31,off}[\text{Cdc20:C-Mad2:p31}^\text{comet}]$

Differential Equations

1) $\dfrac{d[\text{O-Mad2}]}{dt}=-V_\text{bind}-V_\text{dim}-V_\text{m1,dim}$

2) $\dfrac{d[\text{Cdc20}]}{dt}=-V_\text{m1,cat}-V_\text{cat}-V_\text{bind}$

3) $\dfrac{d[\text{Cdc20:C-Mad2}]}{dt}=V_\text{bind}-V_\text{dim}+2\cdot V_\text{cat}+V_\text{m1,cat}-V_\text{p31}$

4) $\dfrac{d[\text{Cdc20:C-Mad2:O-Mad2}]}{dt}=V_\text{dim}-V_\text{cat}$

5) $\dfrac{d[\text{Mad1:C-Mad2:O-Mad2}]}{dt}=V_\text{m1,dim}-V_\text{m1,cat}$

6) $\dfrac{d[\text{Mad1:C-Mad2}]}{dt} = -V_{m1,dim} + V_{m1,cat}$

7) $\dfrac{d[\text{Cdc20:C-Mad2:p31}^{comet}]}{dt} = V_{p31}$

8) $\dfrac{d[\text{p31}^{comet}]}{dt} = -V_{p31}$