kableExtra.pdf

2022-10-11

Getting a nice table for parameterset

```
wait_time <- 10 # time spent at each step
num_strains <- 1 # number of strains per group
event_interval <- 10

## oxygen diffusivity equal to sulfate diffusivity means perfect symmetry
## oxygen diffusivity time series: rep(8e-2, 4), , 10 ^ c(rep(-8, 5),rep(0,5),rep(-8, 5))



log10a_series <- seq(3, -5, length = 10) # symmetry axis at -1, +- 4 units in both direction


num_CB_strains <- num_strains
num_SB_strains <- num_strains
num_PB_strains <- num_strains

sp <- new_strain_parameter(
  n_CB = num_CB_strains,
  values_CB = "symmetric",
  n_PB = num_SB_strains,
  values_PB = "symmetric",
  n_SB = num_PB_strains,
  values_SB = "symmetric",
  values_other  = "symmetric",
  values_initial_state = "symmetric"

)

parameter <- new_runsim_parameter(
  dynamic_model = bushplus_dynamic_model,  # look up name
  event_definition = event_definition_2,
  event_interval = event_interval,
  noise_sigma = 0,
  minimum_abundances = c(1, 0 , 1),       # PB stays 0
  strain_parameter = sp,
  log10a_series =  log10a_series
)

names(parameter$minimum_abundances) <- c("CB", "PB", "SB")
rm(sp)
```

```
parameter$sim_duration <- wait_time * length(parameter$log10a_series)
parameter$sim_sample_interval <- wait_time  # to avoid having negitive ODE results
```

```
# $math format acitvation$, every \\ activates some function inside $$ only needed once -> \\mathrm{} r

Parameter <- c('$\\mathrm{g_{max}}$',
               '$\\mathrm{k_{B,P}}$',
               "$\\mathrm{h_{B,S}}$",
               "$\\mathrm{y^{B}_{P}}$",
               "$\\mathrm{p_{B}}$",
               "$\\mathrm{m_{B}}$",
               "$\\mathrm{a_{SR}}$",
               "$\\mathrm{a_{P}}$",
               "$\\mathrm{S_{b}}$",
               "$\\mathrm{P_{b}}$",
               "$\\mathrm{c}$")

Meaning <- c("Maximum specific growth rate of CB and SB",
             "Half-saturation constant of CB and SB on phosphorus",
             "Half-inhibition constant of CB/SB on reduced sulfur/oxygen",
             "Yield of CB and SB on phosphorus",
             "Production of oxygen/reduced sulfur per CB/SB cell","mortalilty rate of CB and SB",
             "Diffusivity of reduced sulfur",
             "Diffusivity of phosphorus",
             "Background concentration substrates",
             "Background concentration of phosphorus",
             "Oxidation rate of reduced sulfur")

# todo change units

Value <- c(paste(parameter$strain_parameter$CB$g_max, "$\\mathrm{hr^{-1}}$"),
           paste(parameter$strain_parameter$CB$k_CB_P, "$\\mathrm{\\mu M}$"),
           paste(parameter$strain_parameter$CB$h_SR_CB, "$\\mathrm{\\mu M}$"),
           paste(parameter$strain_parameter$CB$y_P_CB, "cells $\\mathrm{\\mu M^{-1}}$"),
           paste(parameter$strain_parameter$CB$Pr_CB, "$\\mathrm{\\mu M cell^{-1}}$"),
           paste(parameter$strain_parameter$CB$m_CB, "$\\mathrm{hr^{-1}}$"),
           paste(parameter$strain_parameter$a_S, "$\\mathrm{hr^{-1}}$"),
           paste(parameter$strain_parameter$a_P, "$\\mathrm{hr^{-1}}$"),
           paste(parameter$strain_parameter$back_O, "$\\mathrm{\\mu M}$"),
           paste(parameter$strain_parameter$back_P, "$\\mathrm{\\mu M}$"),
           paste(parameter$strain_parameter$c, "$\\mathrm{\\mu M^{-1} hr^{-1}}$"))


frame <- data.frame(Parameter, Meaning, Value)
```

```
kable(frame, booktabs = TRUE) %>%
  kable_styling(latex_options = "scale_down") %>%
  row_spec(0, bold = TRUE, font_size = 16) %>%
  row_spec(1:11, bold = TRUE, font_size = 12, hline_after = FALSE) # %>%
```

Parameter	Meaning	Value
$\mathrm{g_{max}}$	Maximum specific growth rate of CB and SB	0.1 $\mathrm{hr^{-1}}$
$\mathrm{k_{B,P}}$	Half-saturation constant of CB and SB on phosphorus	0.5 $\mathrm{\mu M}$
$\mathrm{h_{B,S}}$	Half-inhibition constant of CB/SB on reduced sulfur/oxygen	100 $\mathrm{\mu M}$
$\mathrm{y^{B}_{P}}$	Yield of CB and SB on phosphorus	1.67e+08 cells $\mathrm{\mu M^{-1}}$
$\mathrm{p_{B}}$	Production of oxygen/reduced sulfur per CB/SB cell	3e-08 $\mathrm{\mu M cell^{-1}}$
$\mathrm{m_{B}}$	mortalilty rate of CB and SB	0.04 $\mathrm{hr^{-1}}$
$\mathrm{a_{SR}}$	Diffusivity of reduced sulfur	0.1 $\mathrm{hr^{-1}}$
$\mathrm{a_{P}}$	Diffusivity of phosphorus	0.1 $\mathrm{hr^{-1}}$
$\mathrm{S_{b}}$	Background concentration substrates	100 $\mathrm{\mu M}$
$\mathrm{P_{b}}$	Background concentration of phosphorus	10 $\mathrm{\mu M}$
c	Oxidation rate of reduced sulfur	0.01 $\mathrm{\mu M^{-1} hr^{-1}}$

```
  # row_spec(c(1:6, 9, 10), color = "green") %>%
  # row_spec(c(7:11), color = "red")
  # add_footnote(c("B: Bacteria, same value for cyanobacteria and sulfur reducing bacteria", "S: Substr
```