

Using the mhequ package

Martin Hairer

Version 1.7, August 25, 2015

Here is a simple labelled equation:

$$\sum_{i=1}^5 X_i^j X_i^j = y^j . \quad (1)$$

Removing or adding the label does not require a change of environment:

$$\sum_{i=1}^5 X_i^j X_i^j = y^j .$$

However, if the option `numberall` is set, then every single equation is numbered. A simple list of equations can be displayed either with one number per equation

$$f(x) = \sin(x) + 1 , \quad (2)$$

$$h(x) = f(x) + g(x) - 3 , \quad (3)$$

or with one number for the whole list

$$f(x) = \sin(x) + 1 , \quad (4)$$

$$h(x) = f(x) + g(x) - 3 ,$$

using only a very small modification in the syntax. Of course, it can also have no number at all:

$$f(x) = \sin(x) + 1 ,$$

$$h(x) = f(x) + g(x) - 3 .$$

Let us make a first group:

$$f(x) = \sin(x) + 1 , \quad (5a)$$

$$g(x) = \cos(x) - x^2 + 4 , \quad (5b)$$

$$h(x) = f(x) + g(x) - 3 . \quad (5c)$$

One can refer to the whole block (5) or to one line, like (8a) for example. It is possible to use any tag one likes with the `\tag` command

$$x = y . \quad (\star)$$

Such an equation can be referred to as usual: (\star) . Of course, `mhequ` can be used in conjunction with the usual `equation` environment, but `mhequ` is great, so why would you want to do this?

$$x = y + z \quad (6)$$

Typesetting several columns of equations is quite easy and doesn't require 10 different environments with awkward names:

$$x = y + z \quad a = b + c \quad x = v \quad (7)$$

$$x = y + z \quad a = b + c \quad x = u + 1 \quad (7')$$

$$\text{(multicol)} \quad x = y$$

$$a = b \quad \text{(multicol)}$$

$$x = y + z \quad a^2 = (b - c)^3 + y$$

and also (this is some `\intertext`)

$$x = y + z \quad a = (b + c)^2 - 5 \quad \ell = m \quad (8)$$

We can even extend the block (5) much later like

$$x = y + z \quad x = y + z \quad f(x) = b \quad (5d)$$

$$x = y + z \quad x = y + z \quad g(x) = b \quad (5e)$$

$$\sin^2 x + \cos^2 x = 1 \quad (5f)$$

It is possible to change the type of subnumbering and to use the `\text` command without having to load `amstext`, like so

$$I_1 = \int_a^b g(x) dx, \quad \text{(First equation)} \quad (9A)$$

$$I_2 = \int_a^b g(x^2 - 1) dx. \quad \text{(Second equation)} \quad (9B)$$