

Lab week 2

Linear Regression Analysis

The purpose of this TP is to practice using **R** for linear modeling. We will apply linear regression to two problems with data in the **HSAUR** package. To carry out these analyses, first install and then load the **R** packages **HSAUR3** and **gamair**.

As usual, make sure that you read the **help** for any new functions that you use.

Install R

If you have not done so already, install **R** on your computer. You can find the software at the *Comprehensive R Archive Network*, or **CRAN**. There is a Swiss mirror site at <http://cran.ch.r-project.org/>. If you go to that site, you will find several links under **Documentation** (the fourth major entry on the left side). **Official** documentation is available under **Manuals**; other helpful documentation is under **Contributed**.

If you are not used to using **R**, or if you need a refresher, you can work on the first few sections (**Basic R** and the **hellung** data of **TP 0**)

To proceed, you will need to start **R**. You can copy/paste the code below at the **R** prompt.

Hubble data

Here, these data will be used to estimate the age of the universe. The **hubble** data are found in the **gamair** package:

```
library(gamair)
data(hubble)
names(hubble)
```

Make sure to read the help about the **hubble** data.

The function **plot** is used to make a scatterplot of velocity (y) vs. distance (x) \- read the help for **plot** to see how it is used. You can access the components of **hubble** using the **\$** operator: i.e. **hubble\$x** for the **"x"** component.

Now fit a linear model to predict velocity from distance. Here, we will fit **without** an intercept term (**`-1'**), as it does not make physical sense in this case.

```
hmod <- lm(y ~ x - 1, data=hubble)
```