Welcome at the Seminar for Statistics (SfS)

An introduction to the computer environment and more [1]

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/u/sfs/documentation/welcome-at-sfs-*.pdf; tutorials/welcome-at-sfs.git

student version

Contents

[1] Based on the document "Computerbenützung (und mehr) am SfS" which was created/edited by V. Gelpke, P. Holzer, R. Lutz and L. Meier

Most of the information presented in this document, and much more, is available in our wiki (see Section 1.9)!

1 Getting started

1.1 D-MATH account

You need a D-MATH computer account (configured for the SfS) in order to be able to login on our machines. To get such an account, please proceed as follows (if you do not have an *nethz* account, you first need to take care of that, see http://n.ethz.ch):

1. Go to `https://isg.math.ethz.ch/adduser/` (only accessible from the ETH network, or from outside through a VPN connection)
2. Login with your *nethz* username and password
3. Complete all fields of the online form. Especially, set
   - Status at the ETH? → Student
   - Account needed until → 31/??/20?? (end of project + ca. 1 month)
   - Group membership → SfS (Seminar for Statistics)
   - Account manager → Martin Mächler (SfS)
   - Default printer → hgg14

1.2 Desk / Office

We do not provide fixed work places for students. For students that write their Master Thesis with us, there are computers on the Jth floor (Room J11) which are first come first serve. (Note that a key is required to enter the room and you can only get a key if you are working on a Master Thesis. Ask the secretaries about details.) Students can also work with their own laptop in the D-MATH library. Details about possibilities to remotely access SfS compute servers (and other machines) are provided in Section 2.2.

1.3 Administrative issues

1.3.1 Handing in the project report

If your supervisor does not mention anything else, you are required to hand in two printed copies of your report: one to your supervisor and one to the secretariat (for the seminar's library). Furthermore, you should send a digital copy (PDF) of the report together with a brief abstract (max 1 page A4 and containing as little formulas as possible) in text format (*not* PDF) to the secretariat for publication on our web page.

When handing in your reports to the secretariat, do not forget to also settle your debts for the private copies (and print outs) you made during your time at the Seminar for Statistics (see Section 1.6).

1.3.2 Tasks of PhD students

A few PhD students have (additional) special tasks (see Table 1.3.2). Please refer to the corresponding person depending on your questions.

name	office	tasks
Christina	HG G10.1	SfS web page
Andreas	HG G 10.1	group coordinator
Nicolas	HG G 18	SfS info wiki computer related questions

Table 1: Specific responsibilities of some PhD students

1.4 Key for SfS offices

Master students can get a key for the room on the jth floor. To get a key, proceed as follows:

1. Go the the Secretariat (HG G 10.3) and ask for the form to get a key.
2. Complete the form, and ask one of the secretaries to sign it.
3. Go to the Info + Service Center (HG D 61.2) to retrieve the key.

Typically the key you get will *not* allow to open the doors of the main building. This means that you can enter the building only during the opening hours (Mon-Fri 6:00–22:00 and Sat-Sun 7:00–17:00).

Note that you can always get out of the building. So no need to worry about getting stuck for the night if you stay too late.

It is your responsibility to return the key to the Info + Service Center at the end of your project/job at the SfS.

1.5 Libraries

1.5.1 Seminar library (HG G 14.1)

You can look for books in the seminar library with the command `assgrep` followed by a keyword. `assgrep stahel`, for example, will give you a list of all BibTEX entries where `stahel` occurs either in the title or the author field. The identifier of the BibTEX reference corresponds to the code under which you can find the book in our library.

1.5.2 ETH library

The knowledge portal of the ETH library is located at http://www.library.ethz.ch This interface to the NEBIS catalog, e-journals and online databases allows to browse efficiently for literature. An introduction to the knowledge portal and the main databases for math literature are presented at the beginning of each semester in a one hour tutorial.

1.5.3 D-MATH library

The math department also has a library. The books are part of the NEBIS catalog. Hence you can find them through the search tool of the ETH library. To borrow one of these books however, you need to go to the math library. Please note that the D-MATH library only lends book to employees of the D-MATH department.

1.6 Printing

Our standard (A4) printer is “hgg14” in the office HG G 14.1.

Please record print outs and copies done for private use in the green notebook next to the printer. Do not forget to settle your debts for the copies with Cecilia before leaving the Seminar for Statistics.

The SfS Info wiki gives further information about printing large jobs (for example exam copies) and printing posters (`https://wiki.math.ethz.ch/SfSInfo/PraktischesDruckenReprozentrale`).

1.7 Scanner

The copy machine can also be used as scanner. The files you scan are sent to you by email. Brief instructions about the usage of the scanner are provided next to the copy machine.

1.8 Seminars

During the semester there are usually talks on Thursday (ZüKoSt) and Friday (research seminar) afternoon. The talks are announced under http://stat.ethz.ch/events.

1.9 Support

The SfS Info wiki (`https://wiki.math.ethz.ch/SfSInfo/`) contains a lot of information to help you to solve various computer-related issues. If you cannot find the information you need, or if you do not understand the help, ask one of your roommates for advice. If you think that some information in the wiki is missing or incomplete, feel free to edit it. You can also report the lack to Martin or the PhD student in charge of the the wiki (see Table 1.3.2).

Some but not all pages of the wiki have been translated to english as not everything is still deemed relevant anymore. You might want to use the help of Google Translate if you do not understand small parts of it. Further help is also provided by the PhD student in charge of the computer introductions (see Table 1.3.2) or, if you tried everything else, by Martin Mächler (HG G 16).

The Informatics Support Group (ISG, http://www.math.ethz.ch/isg/) is in charge of the D-MATH accounts, hardware issues as well as general computer and printer problems. To contact the ISG, send an email to isg@stat.math.ethz.ch. Martin and the "computer PhD student" will get a copy of your email as well.

2 Computers

Most machines at the SfS run under Linux (a recent version of Fedora). By default you log into a customized gnome3 interface (https://intranet.math.ethz.ch/support/faq/gnome3).

Brief overview of the default keyboard shortcuts:

- `Alt-F1` or `Windows key` shows you an overview of all applications running on the current desktop (same effect as navigating with the cursor to the upper left corner of the screen)
- `Alt-F2` opens the command dialog.
- `Ctrl-Alt-[up arrow]` and `Ctrl-Alt-[down arrow]` allow to switch between work spaces.
- with `Ctrl-Alt-[left arrow]` and `C-A-[right arrow]` you can switch between the applications running on the current workspace

- with `Alt-[key above Tab]` you can switch between the different instances of the current application
- `Alt-F9`, `Alt-F10`, `Alt-F5` and `Alt-F4` perform tasks on the currently selected window (minimize, maximize, return to previous side and close, respectively).
- `Ctrl-Alt-[n]` switches to desktop n
- `CapsLock` is de-activated and works as an additional `Ctrl` key
- `Ctrl-Alt-Tab` switches between applications

2.1 A few words about ecology

All SfS computers are plugged into so called power save devices. A computer (and connected devices such as a mouse), even when turned off, still consumes some energy. By also switching of this power safe device, you contribute to somewhat restrain the used amount of electricity. Hence, each evening when you leave the office, please:

1. switch off your computer
2. press the power save button

2.2 Remote access

If you want to work from home, you can use the options below to access your data. All these solutions require a running VPN client. Please refer to the wiki (see Section 1.9) for details and further possibilities for remote access.

To install VPN on your private computer, refer to the web page of the IT service: `https://www1.ethz.ch/id/services/list/network/vpn/index_EN`, section "public-VPN". You can get the password either by downloading the Cisco VPN client from IDES or, probably easier, by asking someone who has the program already running on his/her PC.

2.2.1 Copy files from/to your SfS account

Copy files with `sftp` (secure file transfer protocol), for example:

```
sarah@MostlyHarmless ~$ sftp gerster@sftpmath.math.ethz.ch
[...]
sftp>
```

To access your home directory you have to enter the command `cd home`. Note that one can navigate in the tree structure as usual by using `cd`, `ls`, `rm`, ... `sftp` only allows you to access the data in your home directory. Hence commands such as `cd /u/sfs/ueb/` or `cd /sfs/t/gerster/` will not work.

A few useful `ftp` commands: `put`, `get` and `lcd`. Details about these commands are displayed if you type `help` in the ftp session, or with `man ftp` outside of the ftp session.

To quit and `ftp` session use the command `exit` or the key combination `Ctrl-d`.

2.2.2 Log into a running SfS machine with ssh

Use `ssh` (secure shell) to access `pytharski`, for example:

```
sarah@MostlyHarmless ~$ ssh -X gerster@pytharski.math.ethz.ch
[...]
gerster@deb10:~$
```

Note that you do not have to log into deb10, but can choose any other (running) SfS machine. To log out, use either the command `exit` or the key combination `Ctrl-d`.

2.2.3 Use `nxclient` to create a virtual desktop

`nxclient` allows you to get a virtual desktop (graphical access) to a remote computer. This enables you for example to work in the standard SfS environment from home or on your laptop. Of course the quality of the this virtual desktop depends on your internet connection.

The software is platform independent and easy to install. On linux computers the NX client is started and/or configured with the command `nxclient`. A screen shot with the needed configurations is stored in `/u/sfs/documentation/nxclient_config.pdf`

Note that the NX client is a virtual machine. This means that you should not start running (many) huge R -jobs there, but rather use it to edit your code and run small computations. Larger jobs should be handled as usual: log into an SfS compute server and run it with the `R_BATCH` command (see Section 3.4).

2.3 File system

Each user has a home directory `/u/username/` (for example `/u/gerster/`). You should store most of your files in this directory, or in some sub-directories. It is strongly recommended to create a structure of sub-directories to organize the data. Storing things wildly mixed in a single directory leads to chaos sooner or later. A few directories you might want to consider creating (or which already exist when you get your account):

- Masterthesis (or Bachelorthesis or Semesterthesis): contains all text, figures and data contained in the final report
- RAusw: for all work done in R
- Publications: keep track of all presentations, posters and publications. Store all relevant data, text, figures and code for each of them, in case you need to quickly find the information again some day.
- Literature: a place to store copies of the papers you read, and might want to cite some day. Also a good place to set up your own BibTeX file.

Large data sets and/or R output should be stored on scratch partitions (refer to the wiki, see Section 1.9, for details).

2.3.1 File name conventions

.R	R source file: file containing R code.
.ps or **.eps**	(Encapsulated) PostScript file: plots, for example generated in R using the function `ps.latex()` or `postscript()`.
.pdf	PDF file: plots, for example generated in R using the function `pdf.latex()` or `pdf()`.
.tex	(La)TeX file
.bib	BibTeX file
.txt	text file in ASCII
.dat	ASCII file with raw data
.Rnw	Sweave file: typically report, publication, presentation,... Holds as well the LaTeX commands as the R code.
.Rdata	binary file containing R objects

2.4 Some basic linux commands

Table 2.4 gives a summary of the commands needed in order to be able to work in a terminal. It is not mandatory to work with the terminal, since almost all daily tasks can be achieved through clicking on menu items. However, knowing the basic principles of working in a shell will make your work easier.

To avoid too much typing in the terminal, the tab completion comes in handy. You can start typing a command or a file name, and then hit the `Tab` key. If the match is unique, the command/file name will be completed. If the match is not unique, hitting `Tab` a second time will show you a list of all possible completions. Try for example `pdf Tab Tab` to see all available commands starting with `pdf`.

`acroread`	Display PDF files.
`cd`	Change directory. Try `cd ..` and `cd ~`
`chmod`	Change the access right (read, write and execute) of a file.
`cp`	Copy a file: `cp file1.txt file2.txt`
`ada-show/deb-show`	Prints (to the screen) a list of all activities on all SfS compute servers.
`ada-info`	Prints in a compact form some other information about all SfS compute servers.
`e` or `emacs`	Start the editor emacs.
`epstopdf`	Convert `.eps` files to `.pdf` files. Also useful: `eps2pdf`
`evince`	Display PDF or PostScript files.
`ffind`	Look for file which you "lost": `ffind arabidopsis.dat`. This command will find all files with the name `arabidopsis.dat` in the current directory, or, recursively, in any sub-directory. Consider using wildcards (*,?,..., \).
`kill PID`	Close the process corresponding to the identification number PID. Use `top` or `ps` to find the PID of a specific process.
`kill -9 PID`	Aggressive version of `kill PID`: Close the process *now*!
`killl NAME`	Kill all processes which contain "NAME".
`ll`	As `ls`, but with more information about the items. (SfS alias)
`log`	Allows to log on a running machine as a different user. Try `log username` on someone else's computer. (SfS alias)
`ls`	List all files and folders in the current directory.
`man`	Show the help page of another command. Try `man less`
`mv`	Move a file (rename it): `mv file1.txt file2.txt`
`oocalc`	To open "excel" sheets.
`oowriter`	To open "word" documents.
`prt`	Universal print command at the SfS. Use the option `-w` for white paper and `-1` for one-sided printing.
`ps -waux`	Show all processes running on the current machine (machine where you are logged with the current terminal).
`psag`	Show all processes corresponding to a search criteria.
`psg`	Show all *your* processes corresponding to a search criteria.
`psnup`, `pdfnup`	Reformat PostScript of PDF files. Try for example `pdfnup -4 presentation.pdf printable-4x4.pdf`
`pwd`	Show the path of the current directory.
`rm`	Remove (delete) a file: `rm file1.txt`
`rm -r`	Remove a directory (and recursively all its content): `rm -r MyDir` Consider using the option `-f` (hence `rm -rf MyDir`) which will recursively delete all files/folders in `MyDir` *without* asking for confirmation.
`rmdir`	Remove an *empty* directory: `rmdir MyDir`
`ssh`	Command to access another running machine via ssh. Try `ssh debN` ($N \in 1..15$)
`top` or `htop`	Shows all activity on the current machine.
`which`	This command allows you to figure out what is exactly called by a specific command. Try `which R`

Table 2: Set of basic linux commands

2.5 Some editors

Some editors used at the SfS for writing R code and editing LaTeX files are:

emacs	a powerful editor with built-in environment to work with R (Emacs Speaks Statistics)
gedit	Simple text editor for GNOME with syntax highlighting. Also allows for R interaction.
RStudio	Integrated development environment (IDE) for R . Allows you to edit R files with syntax highlighting, browse files, display plots, and browse the help system of R .
Kate	Universal text editor under KDE with syntax highlighting. Allows for interaction with R and LaTeX.
Kile	IDE for LaTeX under KDE. Similar to kate, but with a lot of LaTeX-specific extensions.
TeXmaker	IDE for LaTeX. Has a lot of LaTeX-specific extensions.

3 R

Usually we work with R at the seminar for Statistics. R is the GNU version of S-Plus. This means that R is free and the source code is also freely available.

3.1 Documentation

A lot of documentation exists regarding R . As a first step we suggest to work through the in-house R tutorial (refer to the wiki for a link to the current version).

Official manuals can be downloaded from http://stat.ethz.ch/CRAN The document "An Introduction to R " provides a broader introduction to the software and strongly recommend to read it through. The document "Writing R extensions" is intended (and highly recommended) for advanced users.

Furthermore you might want to check the R FAQ (Frequently Asked Questions) list: `http://cran.r-project.org/doc/FAQ/R-FAQ.html` or `C-h i` in emacs.

The standard reference book for R is "Modern Applied Statistics with S-PLUS" from Venables and Ripley (http://www.stats.ox.ac.uk/pub/MASS4).

3.2 R mailing lists

Several mailing lists exist for R (http://www.r-project.org/mail.html). For most users the R-help list is the most important one. Send an email with the content "subscribe" (respectively "unsubscribe) to r-help-request@lists.R-project.org in order to (un)subscribe. Being a member of this list means receiving about 12 emails a day. There is the possibility to change the settings to "digest" for those who prefer to receive a summary of the activity once a day instead of the single emails.

3.3 Good practice related to R

Typically we work in a directory called `RAusw`.

To understand how a function is working, it is often best to work through the provided examples (in `ess-help` mode the lines can be sent to the running R process with `l` or `C-c C-j`.

3.4 R as BATCH job

`.R` files can be handled as batch jobs. The computations can then run (over night) on one of the SfS' compute servers. The computations will not slow down your local machine, and you can switch it off over night to save energy. The standard procedure to launch your R code as batch job is:

1. Get an overview over the available compute servers and the number of their cores on the intranet website http://intranet.math.ethz.ch/support/centralclients.
2. Open a terminal.
3. Get an overview of the activity on the compute servers: `deb-show/ada-show`
4. Pick a compute server where there is free capacity and log in: `ssh ada-N` where `N = {1,2,...,15}`
5. Check if there really is free capacity with the command `top`. Do not start more jobs than there are available CPUs.
6. Go to the directory where you stored your R code, for example `cd Rausw`
7. Start the batch job: `R_BATCH scriptfile.R outfile.Rout`
8. Check if your job is running with the command `top`. If you cannot see your process it most likely crashed. Use `less outfile.Rout` to see what happened.
9. Log out of the compute server with `exit` or `C-d`. Do not forget to switch off your personal computer before going home (also with the "power-save" button).

3.4.1 Keeping track of the progress of your simulations

It is generally good practice to check up on the simulations while they are running so you can react quickly if things aren't going to plan.

Ideally, you save (intermediate) results regularly so you can load them on your desktop and inspect if all looks fine.

Alternatively, if you regularly print useful information about the progress to the Rout file, you can check that output file.

A simple command to regularly check your output automatically is

```
watch tail -n 20 outfile.Rout
```

The command `tail` looks at the last couple of lines of your file, `tail -n 20` means looking at the last 20 lines of your file. The command `watch` calls what follows every couple of seconds (by default 2 seconds) and shows it to you.

You can stop the command the same way one typically cancels something running on the command line, by pressing `Ctrl + c`.

3.4.2 Running R computations in parallel

Many R -packages exist to run computations in parallel. One easy option is using the R package `parallel` as it requires minimal changes to your code if you start writing your code with the function `mapply`.

Once you have things working using `mapply`, all you have to do to parallelise the computations of the mapply statement is change your line

`mapply(...)`

to

```
mcmapply(...,
         mc.cores=ncores)
```

where ncores is the number of cores you want to use for your computations.

3.4.3 Stopping simulations that were started as a `BATCH` job

If the simulations are only running on 1 core, you can run `htop` selected the particular process with the arrow keys and then kill it using the F9 key and pressing `enter` once.

Stopping your simulations if they are running in parallel on an ada machine is not always trivial. An easy and quite drastic approach is to stop everything running on that particular machine which you started

```
pkill -u gerster
```

where you replace gerster with your own username.

Warning: this will stop all your activity on this machine!

3.4.4 A few "rules"

- Typically you should only start `R_BATCH` jobs on the compute servers. If for some reason you need to launch another program (emacs, matlab,...) do not forget to `renice` it: `renice 7 PID` where `PID` is the process ID (can be found via `top`).
- Make sure your R code produces some output from time to time (use the R function `cat()` in your `scriptfile.R`). This will allow you monitor the progress of your job and estimate the remaining time by checking the output of `less outfile.Rout`.
- If you want to stop a running process, use `kill PID` or `k` in `top` (and then enter the `PID`).
- The `outfile.Rout` is a text file giving you all the input printed with the R function `cat()`. It is however not an appropriate way to store results which you want to re-use in a later stage. Any R object which you want to be able to use later on should be explicitly stored with calls to the R function `save()` in `scriptfile.R`.
- Most of the time there is enough capacities for everybody to compute what is needed. However, as a rule of thumb, do not run more than 4 jobs at the same time. If for some reason you start more than 4 jobs, be prepared to kill some of them at once if other members of the institute require space to compute.
- Do not start more jobs than there are available CPUs. You can see how many CPUs a machine has by hitting `1` in `top` or by looking at the more colorful `htop`.

4 LaTeX

LaTeX is used for text editing at SfS. LaTeX files have the extension `.tex`.

4.1 Sweave

Sweave is an R function to facilitate reproducible research. It enables the integration of R code and output (verbatim or images) into LaTeX. From using R and LaTeX separately, it is only a small step to move on to Sweave. And it is worth the effort: tables an figures are always up to date and match the manuscript, since the text and code are written in

Definition	Command	Result
`\ERW{#1}`	`\ERW{X}`	$\mathbf{E}\left[X\right]$
`\VAR{#1}`	`\VAR{X}`	$\mathrm{Var}\left(X\right)$
`\VARH{#1}`	`\VARH{X,Y}`	$\widehat{\mathrm{Var}}\left(X,Y\right)$
`\COV{#2}`	`\COV{X,Y}`	$\mathrm{Cov}\left(X,Y\right)$
`\COVH{#2}`	`\COVH{X,Y}`	$\widehat{\mathrm{Cov}}\left(X,Y\right)$
`\PR{#1}`	`\PR{X=c}`	$\mathrm{P}\left[X=c\right]$
`\Bin{#2}`	`\Bin{n,p}`	$\mathrm{Bin}\left(n,p\right)$
`\Norm{#2}`	`\Norm{\mu,1}`	$\mathcal{N}\left(\mu,1\right)$
`\Pois{#1}`	`\Pois{2}`	$\mathrm{Pois}\left(2\right)$

Table 4: Illustration of some commands defined in `texab.sty`

the same file. There is an extensive tutorial with many examples available at SfS (check the wiki for the path to the most recent version of the file).

4.2 Documentation

The reference for LaTeX is Tobias Oetiker's "The Not So Short Introduction to LATEX2ϵ". If you do not know LaTeX (well) you should read this through. If you know LaTeX well, it is still useful to have the document as reference on the desktop, or printed out on the desk. A nice way to print it out:

1. download the newest version from the internet (search for "lshort" in Google)
2. run the command `pdfbook lshort.pdf`
3. print out "lshort-book.pdf" and make your booklet

4.3 SfS `.sty` files

Many SfS documents load the in-house package `texab`. This file defines, for example, commands to easily make math symbols often used in statistics. There is also a command to generate the R symbol: `\Rp`. Some examples (from `texab.sty`) are given in Table 4.3.

It is mandatory to use the above definitions in exercise series and exams to ensure a minimal common standard between the different courses and/or teaching assistants. It is also recommended to use the above definitions for own publications.

By default expectation values use square brackets, while variances are denoted with parentheses. If you wish to use square brackets everywhere, load the package with the additional option: `\usepackage[bracketstyle]{texab}`. Accordingly, the package can also be loaded with the options `parenthesisstyle`, `bracestyle` or `anglestyle`. The option `calligraphicstyle` ensures that the B and P for binomial and Poisson distributions are written in calligaphic font. With the `noncalligraphicstyle`, the normal distribution is abbreviated with N. Further (personalized) commands can be found and defined in the file `texab.sty`.

By default the commands in Table 4.3 let LaTeX choose the size of the brackets. If for some reason a specific size is required, it can be mentioned by an additional argument, for example `\ERW[\big]{X}`.

All defined symbols can also be used with indices by adding "i" to the command, for example `\ERWi{\mu}{X}` yields $\mathbf{E}_{\mu}\left[X\right]$. A symbol without brackets can be obtained by adding "Symbol" to the command, for example `\ERWSymbol`.

`texab.sty` holds many more useful commands, and it is worthwhile to have a closer look at it (`/u/sfs/tex/tex/latex/texab.sty`).

4.4 Examples

Once you know the basics of LaTeX it is easiest to learn from examples. You can find many sample `.tex` files in `/u/sfs/tex/BEISPIELE/`. A few are described below.

4.4.1 Include graphics

The R package `sfsmisc` provides functions to generate figures which are well suited to be included in LaTeX: `pdf.latex()` and `ps.latex()`. The generated figures can be included in LaTeX with the command `\includegraphics` (for example: `\includegraphics[width=0.9\textwidth]{test.pdf}`). For this to work, you need to include the `graphicx` package in your LaTeX code (`\usepackage{graphicx}` must be loaded before `\usepackage{texab}`).
An example (R and LaTeX codes) is provided in
`/u/sfs/tex/BEISPIELE/MasterThesisSfS/Pictures/`.
A second example shows how to deal with bounding boxes:
`u/sfs/tex/BEISPIELE/grafik-ex.tex`

4.4.2 Include R code

The `listings` LaTeX package should be used to display R code in a report. An example is given in `/u/sfs/tex/BEISPIELE/listings-ex.tex`

4.4.3 Poster

Posters can be set up as `a0poster` or `sciposter` documents. Corresponding examples are given here: `/u/sfs/tex/BEISPIELE/poster.tex` and
`/u/sfs/tex/BEISPIELE/ExampleSciposter.tar`, respectively.

4.4.4 Masterfile and include

Longer projects can be nicely structured by working with a relatively small masterfile and including the chapters with the command `\include{}`. The masterfile holds the `\documentclass`, loads the necessary packages and holds the `\begin{document}` and `\end{document}` statements. The files with the chapters are incomplete LaTeX files since they do not contain all this, and thus cannot be compiled alone. In order to be able to compile a LaTeX project from within one of these chapter files, one has to specify where the master file is. This is done by adding a statement =%% TeX-master: "masterfile"= at the end of the files. For a concrete example check the structure of the Master Thesis template (see Section 4.4.5)

4.4.5 Master thesis template

Master students get a template to set up their project report in LaTeX. While the usage of the template is optional, it is generally not negotiable to write the report in another format than LaTeX.

To provide the in-house LaTeX package also for use on personal laptops, a zip-archive with the newest version of the template and all included `.sty` files is generated at the beginning of each semester. This zip file can be copied from `/u/sfs/tex/BEISPIELE/MasterThesisSfS.zip` to a personal folder or an USB stick.

The template also includes the Declaration of originality (`confirmation-originality.pdf`) that you need to sign and hand in with your Master Thesis. You need to fill this out, print it, sign it and scan it in again. Copy the scanned document to `confirmation-originality-scan.pdf` in the Master Thesis template folder and it will be automatically added at the end of your Master Thesis pdf.

Lately, students started to use `TeXmaker` to edit and compile their LaTeX projects. The program is available on the SfS machines. If you want to try it out, just type `texmaker <enter>` in a shell.

4.5 BibTeX

Literature is best stored in the BibTeXformat. The articles can then easily be cited in the LaTeX documents (e.g. \cite{HamFRRS86}). Of course you need to tell the compiler where the references can be found (e.g. \bibliography{/u/sfs/bib/Assbib} at the end of the LaTeX file).

The file mentioned above, `Assbib`, already holds BibTeXentries for all books available in the seminar's library.

5 Fun at SfS

Time together to get to know each other better is valuable. To encourage social contacts, the activities described below take place regularly.

5.1 Lunch

A group of people from the SfS is going for lunch together every day. Meeting point is typically in the hall way at exactly 12h30.

5.1.1 Tuesdays

On Tuesday afternoon there is always someone organizing cakes for an extended coffee break. The Tuesday breaks take place in HG G 32.6. The list to sign up to organize the coffee breaks is available in HG G 14.1, behind the coffee machine.

5.1.2 Fridays

On Friday morning at 10:30 there are usually croissants provided for by the permanent staff of SfS.

5.2 Waldhüttenfest

Each spring a barbecue in a "Waldhütte" is organized. A nice evening to chill out together, and also meet ex-members of the SfS.

5.3 Christmas dinner

At the end of the year a Christmas dinner is organized at the SfS.