# Short manual for the Vestibular Chair (VC)

There are three computers involved with the VC setup:

1) The **VDB computer**: controls the VC. This computer is always ON, and should never be turned off! The inlog code may be in possession of Gunter…..
   The log-in screen reads:
   Servo > E (=enable)
           I (= startup)
           O
           D (= stop session)
   There is a list of commands on the board (left). It reads: "stoelbesturing"

2) The **Matlab computer** (right). This computer lets the VC move, and controls the stimulus generation:
   - sound onset via pulse to Spike2
   - LED on- and offset and choice
   - Also reads the status of the joystick

   This is controlled through a Matlab **m file**, which is the actual 'heart' of the experiment.

3) The **Spike-2 computer** (left) performs the data acquisition (input) and sound output (in principle, stereo at 50 kHz per channel, with a minimum of 100000 samples (1.000 sec). For shorter stimuli you fill the array with zeros.
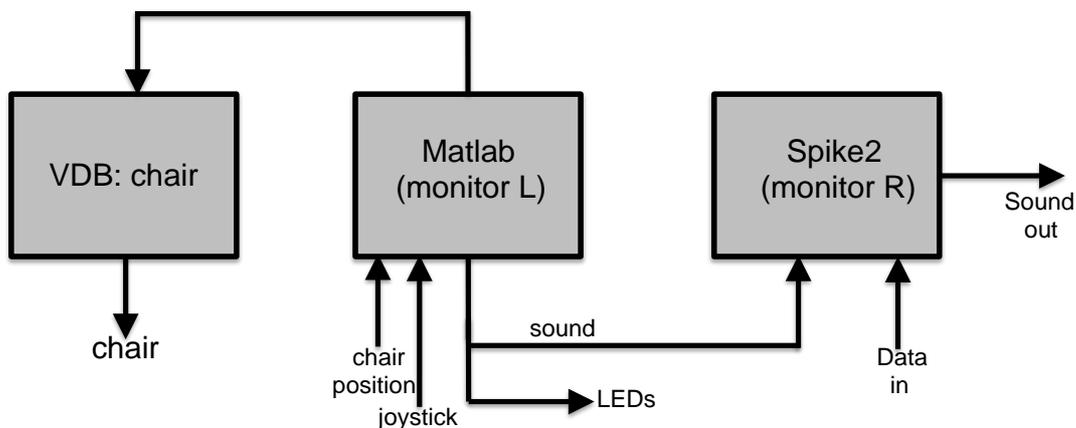
There is a key in a small tray on metal table along right wall: this is for turning on the VC! (little box left on wall: **1**)
- push button on watchdog (outside he VC) next to REM (this light shows whenever is the BRAKE is turned on; should turn green)
- turn on POWER (beeps for 20 s and then clicks (beep stays on): ready!)
- outside the VC room: power supply ON:
      upper-left: Joystick/Camera/Chair Intercom
     lower-right: Magnetic field for eye-movement measurements
- If required: Box on the rack (for use of external LED board on the Magnetic Field (chair-fixed stimuli), or world-fixed pole).
  Note: gray multi-plug should fit!

Further: Turn PARs on + 1401 + scope
      Turn Matlab and Spike2 computers on + mirror monitor + Intercom
   Best to put these all on the same power switch!

INTERCOM: to **talk** turn switch on. To **listen** is always possible.

Now type on the VDB computer:
    E↵ (enable)   [do this BEFORE taking off the brake (REM)]
    I↵ (start)
A <TAB> shows the chair's status.

In room:
Then take off the BRAKE in the exp. room (orange light goes off), by turning the button. Pushing the button turns the brake on.

On VBD:
    F↵ (forward)   Chair now moves to the forward orientation! (the zero position)
        Note that this only works when chair is already close to the zero position.
        So, if the chair was oriented at 180 deg you should first rotate the chair by about 180 deg and then type **F**↵
The VDB monitor indicates *[STOPPED]*

Then (always!) type   **I**↵ (start)
The VDB monitor now indicates *[RUNNING]*

In room:
    When subject is going to be seated in VC turn on the BRAKE! (orange light on)
    The VDB monitor then indicates *[INACTIVE]*

Use the RED EMERGENCY BUTTON only in case of a real emergency!! It might harm the motor, which is irreplaceable.

Seating the subject:
1) Pull frontal magnetic field and vertical field upward (use button to unclamp)
2) Subject seats into the chair
3) Screw of the helmet should fall on top of the helmet. Tighten screw until subject considers it tight enough….
4) Close the vertical field
5) Tighten the seatbelts (note: if subject will be rotated upside down it's imperative to use the extra board with foam to put between the knees, the sturdy breast protection, and 'klittenband')
6) The height of the chair/helmet should be set according to the list (found at the back of the chair): use a working flashlight!
   -   height of the helmet (4 screws)
   -   depth of the helmet (round button plus clamp)
   -   the angle of the helmet (metal screw on top-right)
   -   Chair height: Loosen handles below
               Loosen orange handle on top
               Use imbuss on top (imbuss is found in box next to the
                 Matlab computer screen)
   - set the low turn-button for high/low and then fixate everything else.
7) **Eye** movements: connected in channel 2
    Sound: Stereo channels on 7 (left) and 8 (right) [both for headphone and for external speakers].
        Note: when using headphones you need additional resistors!
    Ledboard cable: Note: sits in the panel, but should be coupled to the Magnetic-field ledboard.
    Counterweights: are needed for tilt experiments! [attached to the blue pipe

on top]. Number of weights: WEIGHT SUBJECT/5 (to within 5 kg accuracy).

8) The plastic blocks on the frontal magnetic field can be used to attach the Ledboard and two free-field speakers, and a LCD monitor.

When all is set:

BRAKE OFF, Lights out, Door closed (note: cloth on floor to block light entry from the outside room!).

DEMO of the VC:

The VDB Computer is sufficient for this!

pS↵   gives a sinusoid stimulus

pr↵   gives a ramp stimulus in position (i.e. a constant chair velocity)

RUNNING AN EXPERIMENT:

1) on Matlab computer: **start the m file**
2) on SPIKE2 computer:
    - Start the Spike Script file (note that the sound files are stored in a specific sound directory!)
    - If you use sound stimulation: you need a **sound list file**!
      (the stimulus list is not selected at random. Randomization should be put in the file by hand!)
    - After selecting START the computer starts to collect data! (one long data file).
    - The GATE channel can be used to define trials.
3) on Matlab computer: play the stimuli.
4) When experiment is ready: on SPIKE2 computer select QUIT and SAVE
5) Data is saved as a **smr file**
6) **As an example, see the examplescripts**

Denise has several analysis functions to process the data files.

When ready:
After EXIT of the SPIKE2 program you're back in the code.
Selecting RUN↵ starts the protocol again *(button with paper with arrow??yes)*

Or: after EXIT you can run another Spike script file (an **s2s file**; N.B.: the data directories are also here!)
(e.g. with eye ring recording;
   or no sound/eye movement/chair movement to do just psychophysics)

Turn off computers (except the VDB computer!)
On VDB: type O↵ and D↵
Turn off the apparatus
Turn off the VC (OFF, wait a moment, then turn key and return to box on table)
Cables for headphones, resistor in cupboard, glasses on the metal table.