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| « [Having a go at milling speed IPM](http://forscience.nl/?p=119)  [LinuxCnc – Touch plate – Part 2](http://forscience.nl/?p=197) »  May 28 2012  [http://forscience.nl/wordpress/wp-content/themes/mandigo/images/icons/bullet_sidebars_hide.png](javascript:toggleSidebars();)[http://forscience.nl/wordpress/wp-content/themes/mandigo/images/icons/bullet_toggle_minus.png](javascript:togglePost(144);)  [**LinuxCnc – Touch plate – Part 1**](http://forscience.nl/?p=144)  Posted by [admin](http://forscience.nl/?author=1) in [Cnc](http://forscience.nl/?cat=8)  Configuring [LinuxCnc](http://www.linuxcnc.org/) to accept my touch plate (also known as a touch-off plate) was not easy. Based on the information form [cnczone.com](http://www.cnczone.com/forums/linuxcnc_formerly_emc2/62423-touch-off_plate_cnc_router.html) I compiled this overview.  Part 1: preparation   1. Add Touch Plate to your system 2. Configure the Pin in LinuxCnc 3. Verify the basic functionality works   **Step 1: the actual touch plate**  My system didn’t have a touch plate nor did it have a connection prepared for this. This article is not about adding a touch plate interface to your controller board, but about configuring LinuxCnc to be able to use it. Nevertheless 2 photo’s of my work to modify my controller to accept a touch plate.    [Driver-board-empty-socket](http://forscience.nl/wordpress/wp-content/uploads/Driver-board-empty-socket.png)  Driver board with empty connector. Section A is for the limit switches. Section B will contain the wires for the touch plate.    [Driver-board-full-socket](http://forscience.nl/wordpress/wp-content/uploads/Driver-board-full-socket.png)  Section A has the limit switches wired up. Section B has the new wiring for the touch plate.    **Step 2:  Configure the Pin in LinuxCnc**  LinuxCnc needs to know to which (input) pin number of the driver board the touch plate is connected. In my case it’s pin number 13, **consult your driver boards manual or other provided documentation to find yours**.  Configure LinuxCnc for using the touch plate. Start the Stepconf Wizard.  [http://forscience.nl/wordpress/wp-content/uploads/LinuxCnc-stepConf-Wizard-opening-screen-300x240.png](http://forscience.nl/wordpress/wp-content/uploads/LinuxCnc-stepConf-Wizard-opening-screen.png)  Select modify your configuration.  Select the existing configuration file.  Press forward on the Basic Machine Information screen.  Press forward on the Advanced Configuration options.  Now you arrived at the Parallel Port Setup screen.  Select the correct pin number, mine is 13, and select ***Probe In*** from the dropdown menu (See A). After verifying my setup (See step 3 further down) I found out that I had to invert my signal hence the invert box is ticked (See B).  [http://forscience.nl/wordpress/wp-content/uploads/LinuxCnc-stepConf-Wizard-parallelPort-screen-300x248.png](http://forscience.nl/wordpress/wp-content/uploads/LinuxCnc-stepConf-Wizard-parallelPort-screen.png)  **Step 3: Verify the basic functionality works**  It’s important to test the new setup. It’s easy, takes a minute or so and can save you a lot of headache afterwards trying to troubleshoot your setup.   * Start LinuxCnc and switch on your cnc   Select Halmeter in LinuxCnc, select the signals tab and look at the Probe In status  So here we:   1. Select Halmeter in LinuxCnc 2. Select the signals tab 3. Select ***Probe In*** 4. Look at the Probe In status   The Probe In status should be FALSE here unless your probe is actually touching. If your probe is not touching and the status is True the you should tick the Invert box on your parallel port setup, see last image of Step 2.  Final check, this is what you should see (watch the screen titled “Hal Meter”):  [http://forscience.nl/wordpress/wp-content/uploads/LinucCnc-negative-probe-230x300.png](http://forscience.nl/wordpress/wp-content/uploads/LinucCnc-negative-probe.png)  Halmeter running, probe not touching, result is FALSE  [http://forscience.nl/wordpress/wp-content/uploads/LinucCnc-positive-probe-230x300.png](http://forscience.nl/wordpress/wp-content/uploads/LinucCnc-positive-probe.png)  Halmeter running, probe is touching, result is TRUE  **Share this:**   * [Facebook](http://forscience.nl/?p=144&share=facebook) * [Email](http://forscience.nl/?p=144&share=email)   This entry was posted on Monday, May 28th, 2012 at 23:04 and is filed under [Cnc](http://forscience.nl/?cat=8). You can follow any responses to this entry through the [RSS 2.0](http://forscience.nl/?feed=rss2&p=144) feed. You can [leave a response](http://forscience.nl/?p=144#respond), or [trackback](http://forscience.nl/wordpress/wp-trackback.php?p=144) from your own site.  2 Responses to “LinuxCnc – Touch plate – Part 1”   1. [http://forscience.nl/wordpress/wp-content/themes/mandigo/images/icons/bullet_toggle_minus.png](http://forscience.nl/?p=144)   [*For Science » LinuxCnc – Touch plate – Part 2*](http://forscience.nl/?p=197) says:  [June 11, 2012 at 22:14](http://forscience.nl/?p=144&cpage=1#comment-208)  […] « LinuxCnc – Touch plate – Part 1 Jun 11 2012 […]  [Reply](http://forscience.nl/?p=144&replytocom=208#respond)   1. [http://forscience.nl/wordpress/wp-content/themes/mandigo/images/icons/bullet_toggle_minus.png](http://forscience.nl/?p=144)   http://2.gravatar.com/avatar/bc19ee38fec517013701359a4d0cf800?s=32&d=mm&r=g*joseph Brown* says:  [October 20, 2014 at 22:44](http://forscience.nl/?p=144&cpage=1#comment-3067)  I want to learn how to program the touch probe to set offset on contour and casting is there a cd with video are a on line school that teach how program a touch probe if you know of a school it would help me a lot thank you for your time and understanding from Mr. Joseph Brown  [**For Science**](http://forscience.nl/)  **Because we can**   * [Home](http://forscience.nl/) * [About](http://forscience.nl/?page_id=2)  |  | | --- | | « [LinuxCnc – Touch plate – Part 1](http://forscience.nl/?p=144)  [MCP2210 single side PCB design](http://forscience.nl/?p=249) »  Jun 11 2012  [http://forscience.nl/wordpress/wp-content/themes/mandigo/images/icons/bullet_sidebars_hide.png](javascript:toggleSidebars();)[http://forscience.nl/wordpress/wp-content/themes/mandigo/images/icons/bullet_toggle_minus.png](javascript:togglePost(197);)  [**LinuxCnc – Touch plate – Part 2**](http://forscience.nl/?p=197)  Posted by [admin](http://forscience.nl/?author=1) in [Cnc](http://forscience.nl/?cat=8)  In [Part 1](http://forscience.nl/?p=144) we verified the touch plate being connected and configured right. Now it’s time to get it working.    **Credits**  Without the information in [this](http://www.cnczone.com/forums/linuxcnc_formerly_emc2/62423-touch-off_plate_cnc_router.html) thread on [cnczone.com](http://cnczone.com/) I wouldn’t be able to do this so credits to cnczone.com and especially to author ***Spokes*** who provided a tutorial and bundled the files needed on [page 11](http://www.cnczone.com/forums/linuxcnc_formerly_emc2/62423-touch-off_plate_cnc_router-11.html) of the mentioned thread. Here is a [link](http://www.cnczone.com/forums/attachment.php?attachmentid=121648) to zip file with his files and tutorial. While I’m, setting up my CNC with the touch plate I provide this step by step overview. I’m using LinuxCnc 2.5.3  **Create a backup**  The setup and configuration changes the current setup. If for whatever reason you need to roll back this will help you out.  Locate the directory containing your configuration files. To help you identify, this typically contains files like:   * <myname>.hal * <myname>.ini * custom.hal * custom\_postgui.hal * linuxcnc.var * postgui\_backup.hal * README * tool.tbl   Select all files in that directory and copy them to a backup directory (I called it backup1).    **Add HalUi and PyVCP**  Using the defaults when setting up your system with LinuxCnc some options are not enabled. Time to do it now. Start the Stepconf Wizard.  <http://forscience.nl/wordpress/wp-content/uploads/LinuxCnc-stepConf-Wizard-opening-screen.png>   * Press *Forward* * Select *Modify* your configuration. * Select your existing configuration file. * Press *Forward* on the Basic Machine Information screen.   You now arrive on the ***Advanced Configuration options*** screen.  http://forscience.nl/wordpress/wp-content/uploads/LinuxCnc-stepConf-Wizard-AdvancedConfigurationOptions-screen.png  Tick the boxes at the marked positions A and B. Verify the other options are the same as on the screenshot.  **Download the files**  You can download the zip file needed for the remaining steps:   * [here](http://www.cnczone.com/forums/attachment.php?attachmentid=121648) from the original post in cnczone.com * [local copy](http://forscience.nl/wordpress/wp-content/uploads/TouchPlate.zip) (different name, same files though).   Unzip the archive in a temporary directory (on your desktop for example) and go into the folder named *plasma* or *touchplate* depending on which link you followed for the zipfile. Both archives contain the same files.  **Replace custom panel**   1. Go to the directory containing your current configuration files. This is the same directory as where you created the backup from as mentioned at the top of the article. 2. Find the file named *custompanel.xml* 3. Copy (yes overwrite it) the file *custompanel.xml* from the unzipped archive on your desktop into the directory containing your actual configuration.   Yes indeed you just replaced your current custompanel.xml with the one from the zip archive.  [LinuxCnc-Diff-Custompanel](http://forscience.nl/wordpress/wp-content/uploads/LinuxCnc-Diff-Custompanel.png)  A diff of the old and new file. Note: the new custompanel.xml defines two buttons. The first is required, the second optional. For now keep both the required and optional part.  **Quick check**  Time to verify if the steps above. Just start LinuxCnc and verify that 2 new buttons appear on the right side of the screen. No need to click anything here. Just verify you see the 2 buttons as in the screenshot below. If you don’t have these button: close LinuxCnc, restore the backup from the beginning and start over.  [http://forscience.nl/wordpress/wp-content/uploads/LinuxCnc-First-Button-check-300x195.png](http://forscience.nl/wordpress/wp-content/uploads/LinuxCnc-First-Button-check.png)  Close LinuxCnc and continue with the next steps.    **Add the Touch Button Code**  The code behind the touch off button is a *classic ladder*. (For the curious, documentation can be found [here](http://www.linuxcnc.org/docs/html/ladder/classic_ladder_fr.html).)   * Copy the file *Touch\_OFF\_Button.clp* from the unzipped archive on your desktop into the directory containing your actual configuration.   Quote from the [Classic Ladder documentation](http://www.linuxcnc.org/docs/html/ladder/classic_ladder_fr.html#_files):  “*Typically classic ladder components are placed in the custom.hal file if your working from a Stepconf generated configuration. These must not be placed in the custom\_postgui.hal file or the Ladder Editor menu will be grayed out.*”   * In the directory containing your actual configuration open the file *custom.hal* and verify that it contains only lines starting with a **#** character. (This is the case with a default install.) * If so then copy the file *custom.hal* from the unzipped archive on your desktop into the directory containing your actual configuration and replace the original with the new one. (If not you can try to copy the contents of the *custom.hal* from the unzipped archive on your desktop and append it to your *custom.hal* file of your current configuration.)   The same thing for the *custom\_postgui.hal* file, here we go:   * In the directory containing your actual configuration open the file *custom\_postgui.hal* and verify that it contains only lines starting with a **#** character. (This is the case with a default install.) * If so then copy the file *custom\_postgui.hal* from the unzipped archive on your desktop into the directory containing your actual configuration and replace the original with the new one. (If not you can try to copy the contents of the *custom\_postgui.hal* from the unzipped archive on your desktop and append it to your *custom\_postgui.hal* file of your current configuration.)   **Using the latest and greatest**  When using LinuxCnc 2.5.0 as I do the *custom.hal* file now actually contains too much information (and it will not work).   * Go to the directory containing your actual configuration files * Edit *custom.hal* with a text editor (like gedit)  and **remove** these two lines:   ***loadrt classicladder\_rt*** ***addf classicladder.0.refresh servo-thread***  Keeping true to the work done by the good people on cnczone.com the original method as described there was followed to the letter. But for recent versions of LinuxCnc the modification as described above is mandatory.    **Update the “.ini” file**  Last steps of the process, you are nearly there.   * In the directory containing your actual configuration **locate** the one file with extension *ini* *<myname>.ini* where *<myname>* can be any text, depending on how you named your cnc setup in LinuxCnc.   With the *.ini* file located you need to **verify** one entry.   * Open <myname>.ini with a text editor (like gedit). Scroll down until you see the [DISPLAY] section. Verify that one of the lines there states:   + ***PYVCP = custompanel.xml***   [http://forscience.nl/wordpress/wp-content/uploads/LinuxCnc-Ini-Verify-PYVCP-263x300.png](http://forscience.nl/wordpress/wp-content/uploads/LinuxCnc-Ini-Verify-PYVCP.png)  The entry should already be there. If not add it manually, but most likely you forgot a step somewhere along the line (better to start over from the beginning).  Last modification.   * Open <myname>.ini with a text editor (like gedit) * Find the section named: **[HALUI]** * Now add the following 4 lines:   ***MDI\_COMMAND = G38.2 Z-2 f16*** ***MDI\_COMMAND = G92 Z0.25*** ***MDI\_COMMAND = G0 Z0.75*** ***MDI\_COMMAND = G92 x2 y-.5***   * Save your .ini file   <http://forscience.nl/wordpress/wp-content/uploads/LinuxCnc-Ini-Add-Mdi.png>  Note: The mentioned thread on cnczone.com says that instead of the G92 command it recommended to use G10 L20 P0. Next article on that. :-)    **Time to launch**  Start LinuxCnc   * If you get any errors when starting LinuxCnc please reread the section “Using the latest and greatest” and remove 2 lines from *custom.hal*.   Verify the buttons are on the right.  Switch to MDI mode and the buttons should be active!  **Be careful when testing the touch off plate!**    **Share this:**   * [Facebook](http://forscience.nl/?p=197&share=facebook) * [Email](http://forscience.nl/?p=197&share=email)   This entry was posted on Monday, June 11th, 2012 at 22:13 and is filed under [Cnc](http://forscience.nl/?cat=8). You can follow any responses to this entry through the [RSS 2.0](http://forscience.nl/?feed=rss2&p=197) feed. You can [leave a response](http://forscience.nl/?p=197#respond), or [trackback](http://forscience.nl/wordpress/wp-trackback.php?p=197) from your own site.  14 Responses to “LinuxCnc – Touch plate – Part 2”   1. [http://forscience.nl/wordpress/wp-content/themes/mandigo/images/icons/bullet_toggle_minus.png](http://forscience.nl/?p=197)   [*Cut depths and spindal speeds to improve finsh time - MYCNCUK - The UK diy cnc machinists community.*](http://www.mycncuk.com/forums/tool-tooling-technology/5768-cut-depths-spindal-speeds-improve-finsh-time-2.html#post42734) says:  [February 22, 2013 at 09:17](http://forscience.nl/?p=197&cpage=1#comment-623)  […] […]  [Reply](http://forscience.nl/?p=197&replytocom=623#respond)   1. [http://forscience.nl/wordpress/wp-content/themes/mandigo/images/icons/bullet_toggle_minus.png](http://forscience.nl/?p=197)   http://0.gravatar.com/avatar/6c72e08c58574b8bedd32245d85cd198?s=32&d=mm&r=g*Jeppe* says:  [April 5, 2013 at 08:33](http://forscience.nl/?p=197&cpage=1#comment-637)  Very nice and guiding presentation! I wish more people in the Linux world had the ability to explain things that you have. Thanks!  [Reply](http://forscience.nl/?p=197&replytocom=637#respond)   1. [http://forscience.nl/wordpress/wp-content/themes/mandigo/images/icons/bullet_toggle_minus.png](http://forscience.nl/?p=197)   http://1.gravatar.com/avatar/7cdeff6f0d8635de616a732d04aa9163?s=32&d=mm&r=g[*Gururaj*](http://gurugem.wix.com/ideaguru) says:  [November 4, 2013 at 17:56](http://forscience.nl/?p=197&cpage=1#comment-1274)  Hi,  This is really very relevant article for people who wants to add the probing feature of Linux CNC. I totally agree with you that there are lots of info on the thread you mentioned under credits heading (cnczone.com).  One small request. In the both the zip files you shared (local copy: TouchPlate.zip and the one from cnczone: configfiles.zip) the third MDI command for “Z rapid away” is commented out. i.e the following line must be un-commented so that Z will move away from the touch plate after the probing has been done.  net rapid-away classicladder.0.out-02 => halui.mdi-command-02.  I spent almost three complete days to figure this out (Spent time in analyzing ladder diagram, Gcode etc :)). If you can make this change in the shared zip file or post this comment in your website, it may help others to resolve the issue I faced.  -Regards, Gururaj  [Reply](http://forscience.nl/?p=197&replytocom=1274#respond)   1. [http://forscience.nl/wordpress/wp-content/themes/mandigo/images/icons/bullet_toggle_minus.png](http://forscience.nl/?p=197)   http://0.gravatar.com/avatar/3892eb7950a85fb68d9c4e4935d63eda?s=32&d=mm&r=g[*Joe Hildreth*](http://www.myheap.com) says:  [December 11, 2013 at 21:45](http://forscience.nl/?p=197&cpage=1#comment-1377)  Just wanted to confirm this is a great how-to. I have followed your instructions and read the thread you linked above a few times and it works. Thanks for taking the time to share it. Also, I have a couple of questions.  1) May I reproduce the concept of your work? I am building a KRMx01 router to replace my JGRO machine and as written, this plan uses Mach3 for the controller. I plan on giving details on how to use LinuxCNC with the router and other electronics and motors as well. This would be a nice addition to that. I will give you credit and a link as well. I am a ways off from completing the project, you you can follow my progress if you like by going to <http://myheap.com/krmx01-cnc-router/krmx01-build-log.html>.  2) I used both the G92 and the G20 L10 P1 commands to try to figure out the difference. It seems to me they pretty much produce the same results. My question is, when I do a manual touch off, the plot of the paths will move to a new position. When it is done programatically (if that’s a word) with the touch off button, the plot does not move. For completeness, and a great visual indicator, is it possible to get the plot to move when the touch off is complete?  Thanks again for your hard work. Simply a great job you have done.  Regards, Joe  [Reply](http://forscience.nl/?p=197&replytocom=1377#respond)   1. [http://forscience.nl/wordpress/wp-content/themes/mandigo/images/icons/bullet_toggle_minus.png](http://forscience.nl/?p=197)   http://2.gravatar.com/avatar/2c62ed58ada625bd736873a859e57020?s=32&d=mm&r=g*Mehis* says:  [May 25, 2014 at 22:49](http://forscience.nl/?p=197&cpage=1#comment-2295)  Good work!  Followed these instructions. Works excellent after some justifications, but I noted that after automatic homing to x0 y0 z150 coordinates became as writed on HALUI section of \_\_\_.ini file. some has gone wrong, I think.  Thanks to author!  [Reply](http://forscience.nl/?p=197&replytocom=2295#respond)   1. [http://forscience.nl/wordpress/wp-content/themes/mandigo/images/icons/bullet_toggle_minus.png](http://forscience.nl/?p=197)   http://0.gravatar.com/avatar/cc9d3ff04bb401571421a2e9338297a0?s=32&d=mm&r=g*sad* says:  [February 28, 2015 at 20:37](http://forscience.nl/?p=197&cpage=1#comment-3642)  hello, thanks a lot for this tutorial. i would like to use the touch plate for woodworking, placing the plate on top of workpiece, but any plate have some thickness. so, my question is: is it possible to set an offset (the same of plate thickness) on the configuration files to get the right touch off? best regards  [Reply](http://forscience.nl/?p=197&replytocom=3642#respond)   1. [http://forscience.nl/wordpress/wp-content/themes/mandigo/images/icons/bullet_toggle_minus.png](http://forscience.nl/?p=197)   http://1.gravatar.com/avatar/76b6131297d284f0b749ad68f51e308f?s=32&d=mm&r=g[*Bob*](http://N/A) says:  [March 26, 2015 at 20:28](http://forscience.nl/?p=197&cpage=1#comment-3797)  I was wondering the same thing. Where do we set the offset for the thickness of the plate.  Thanks  [Reply](http://forscience.nl/?p=197&replytocom=3797#respond)   * + [http://forscience.nl/wordpress/wp-content/themes/mandigo/images/icons/bullet_toggle_minus.png](http://forscience.nl/?p=197)   http://1.gravatar.com/avatar/18698b2ce2713bf668903e6780597824?s=32&d=mm&r=g[*Bert*](http://forscience.nl) says:  [April 2, 2015 at 13:25](http://forscience.nl/?p=197&cpage=1#comment-3811)  Hi, please download my local copy with all files and open/read de rtf document. There it explains the Z offset (thickness of touch plate). Bottom line is that the G92 Z0.25 means a 0.25 plate thickness. Please change the value as needed.  [Reply](http://forscience.nl/?p=197&replytocom=3811#respond)   * + - [http://forscience.nl/wordpress/wp-content/themes/mandigo/images/icons/bullet_toggle_minus.png](http://forscience.nl/?p=197)   http://0.gravatar.com/avatar/6c9a44c4dd4200ae7f2c5065072f7b5a?s=32&d=mm&r=g*George* says:  [August 29, 2015 at 04:58](http://forscience.nl/?p=197&cpage=1#comment-4495)  Thanks for the great tutorial. I followed your instructions to the letter,to add a touch off plate to my cnc router. It works OK,except for one thing: The Z axis moves up,instead of down towards the touch plate!! Could you,please,help me with making it move in the right direction?  [Reply](http://forscience.nl/?p=197&replytocom=4495#respond)   * + - * [http://forscience.nl/wordpress/wp-content/themes/mandigo/images/icons/bullet_toggle_minus.png](http://forscience.nl/?p=197)   http://0.gravatar.com/avatar/6c9a44c4dd4200ae7f2c5065072f7b5a?s=32&d=mm&r=g*George* says:  [August 29, 2015 at 05:32](http://forscience.nl/?p=197&cpage=1#comment-4496)  Fixed it!! I just deleted the minus sign from MDI\_COMMAND = G38.2 Z-2 f16 and it works now. The Z axis moves down. Greetings to all.  [Reply](http://forscience.nl/?p=197&replytocom=4496#respond)   * + - * + [http://forscience.nl/wordpress/wp-content/themes/mandigo/images/icons/bullet_toggle_minus.png](http://forscience.nl/?p=197)   http://0.gravatar.com/avatar/6c9a44c4dd4200ae7f2c5065072f7b5a?s=32&d=mm&r=g*George* says:  [August 29, 2015 at 05:49](http://forscience.nl/?p=197&cpage=1#comment-4497)  Sorry everyone,I had to insert the minus in,then close and restart the Linuxcnc for the probe to work correctly.   1. [http://forscience.nl/wordpress/wp-content/themes/mandigo/images/icons/bullet_toggle_minus.png](http://forscience.nl/?p=197)   http://1.gravatar.com/avatar/76b6131297d284f0b749ad68f51e308f?s=32&d=mm&r=g[*Bob*](http://N/A) says:  [March 27, 2015 at 00:06](http://forscience.nl/?p=197&cpage=1#comment-3798)  I also have it all configured. Part 1 works fantastic. Pin 15. When I finish with part 2, does nothing. No movement or notices when either button is pushed.  Copied backup over and tried again. 4 times.  This is using the latest LinuxCNC 2.6.7  Thanks Bob  [Reply](http://forscience.nl/?p=197&replytocom=3798#respond)   1. [http://forscience.nl/wordpress/wp-content/themes/mandigo/images/icons/bullet_toggle_minus.png](http://forscience.nl/?p=197)   http://2.gravatar.com/avatar/ed2a84ff6c0bdf915bf326aa2a4f0c95?s=32&d=mm&r=g*Jeff* says:  [April 18, 2015 at 04:09](http://forscience.nl/?p=197&cpage=1#comment-3890)  Thank you! I am very excited to have this functional button now. I have LinuxCNC 2.5.0 and followed the directions carefully but the [HALUI] section did not show up in my .ini file but there was a [HAL] section. My solution was to place “HALUI = halui” in the [HAL] section which then invoked HALUI and created that section in my .ini which allowed me to place the MDI\_COMMAND lines in there. THANK YOU for this excellent tutorial and now the capability of the touchoff plate and button. I used a PCB board and it is working great.  [Reply](http://forscience.nl/?p=197&replytocom=3890#respond)   1. [http://forscience.nl/wordpress/wp-content/themes/mandigo/images/icons/bullet_toggle_minus.png](http://forscience.nl/?p=197)   http://0.gravatar.com/avatar/06e2b6fef886afe88200fd2951019c7f?s=32&d=mm&r=g*Bernice* says:  [May 10, 2015 at 12:39](http://forscience.nl/?p=197&cpage=1#comment-4017)  Do you have any video of that? I’d like to find out more details.Bottom of Form |   Bottom of Form |