# SCH PROGRAM USER START TIPS

This can be used not only with one of the HP48 calculator still around ( now quite costly on eBay! And elsewhere) but also with the Windows **EMU48** , an **emulator** of the famous **HP48GX** using the HP RPL language ( the acronym stands for Reverse Polish Lisp , a mix of Reverse Polish Notation and LISP – Lot of Insane Stupid Parenthesis )
Note that an **E48 exist for the Mac** persons !


This particular program is to be use for knot following the THK SHADOW ( or THK cordage route ) not forcibly with the coding of the TRUE THK O1 U1 / U1 O1. ( see my web pages on THK for clarification )

THK are both ROW and COLUMNS ( SCHAAKE frame of reference : horizontal mandrel with BIGHT rim in the left and on the right but this is intellectual myopia as for the vertical cylinder frame of reference with Bight rim Top and Bottom Row become Column and Column become Row.

**It is QUITE PREFERABLE TO USE A NON MYOPIC language which will stay constant between the two frame so I think in terms of**
- **parallel Bight for Columns on mandrel and Row on cylinder**
- **inter-Bight coding for Rows on mandrel and Columns on cylinder**

So SCHAAKE's Row are for me **Inter-Bight code** and Columns are **Parallel Bight code** and there is no need to change the words if you go to cylinder frame of reference.

Back to topic : True THK are BOTH ROW and COLUMNS coded so this program can do them BUT only because of the Columns coded and though it will do knots that are only Column-coded it will not do knots that are
Only Row coded ( because then the coding sequence change not only from Odd to Even Half-Periods but also between Odd Half-Periods and between Even Half-Periods. I will attempt a program for them later ( in the midst of clarifying the mathematics of that )

In FOLDER HP-MANUALS :

- a quick start manual ( small )
- a 'normal' user manual a lot more detailed
- a "programmer' user manual explaining USER RPL

(there is a MACHINE RPL)

I will here just give what is strictly necessary to use the EMU48 once the application is opened

In the download you get an already installed EMU48 in full working order but with an 'arrangement of the original HP48 aspect to conform with the landscape disposition of computer screen

**FOLDER EMU48** :
Open this folder
Eventually read FILE EMU48.TXT

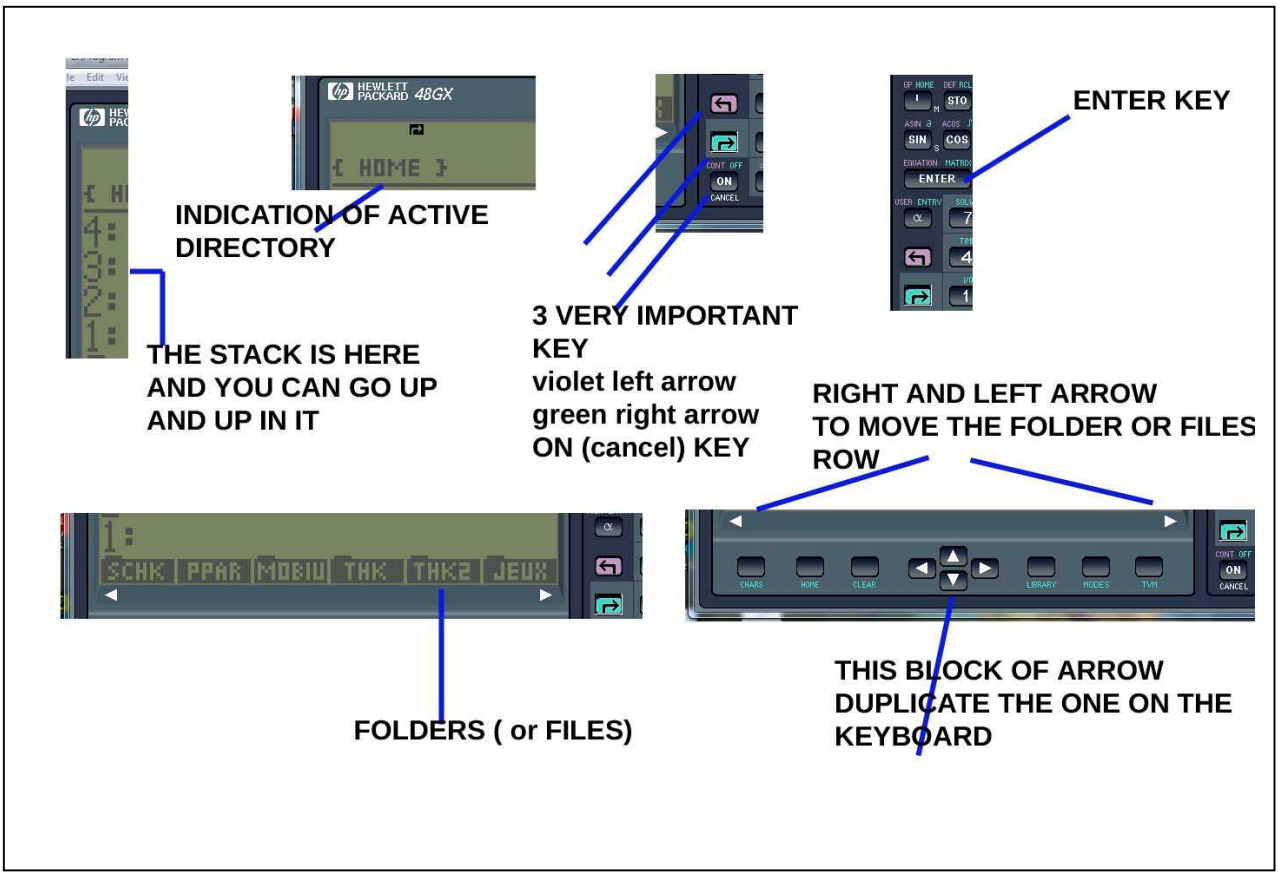
To start the application : EMU48.EXE will do that for you after being clicked upon
FOLDER 'My Programs' is where I will put my programs

Now the application is opened as under ( my choice of working image, there are other available )


HAVE AN ATTENTIVE LOOK AT THE KEYBOARD PART

FOR THE MOMENT YOU WILL NEED ONLY A PART OF IT

DO NOT HESITATE TO HAVE A QUICK LOOK AT THE SMALLER USER MANUAL IN FOLDER : HP-MANUALS




If you get a message for error following an invalid or illegal entry just key the ON once

**{ }** : to open this list use the violet left arrow + lowest right corner of keyboard key
you are inside the { } now enter your code ( of for the MOEBIUS the number of Stands )
using 0 ( zero not letter “o” ) for UNDER , LOW crossing and 1 for OVER , HIGH crossing with an empty space between each digit ( space key is fourth on lowest row in keyboard )
example given { 1 0 0 1 1 ……1}

**NOTE : the coding of crossings is the one seen by the SPart-Wend VECTOR on the FIRST HALF-PERIOD in the FINISHED knot that is coming from the Left / Bottom BIGHT rim towards the Right/Top BIGHT rim on the first half-period laid to make the knot.**

**IMPORTANT : When asked for an input : coding sequence, choice for mandrel of cylinder….etc the program HALT.**
**Make your entry, eventually make a correction then use key ENTER to enter your input**
**You may still make a correction, program is still HALT ( indication at the top of the calculator screen ) to make it resume you have to use the function CONT which is activated by Violet Left Arrow + Key ON ( lowest key in keyboard left corner). The program will continue.**

RESULTS will be put in the STACK
KNOT IS MADE CCW ( counter-clockwise )

TO ACCESS THE STACK ABOVE THE 4 LINES ON THE SCREEN : use the UP arrow which is on the uppermost row of keyboard Fifth key they continue with either the UP or DOWN arrow to circulate in the STACK
To get out of the STACK just ON once
CAREFULL the White Left arrow : last key on the fifth row from top will drop the item in level 1 of the STACK. ( in case of false manoeuvre : Immediately use Green Right Arrow + UNDO which is the EVAL key o : third on the third row from Top )

TO READ ENTIRELY A LONG ENTRY IN STACK put the index on it and use Violet left arrow + EDIT in +/- key (the one on the immediate right side of the big ENTER key )
Then ENTER to send it back on the STACK

## NOW FOR THE PROGRAMS :

To OPEN a FOLDER or a data FILE or to RUN a program FILE or : put the mouse on it and left click

OPEN FOLDER THK
Inside , among other, are :
READ ( use arrow to make it down and up ) will give you sketchy tips

DO NOT USE ( for the moment at least , till you are well use to the emulator which is set to AUTOMATICALLY save its last configuration on shut down ) ANY OTHER FILE THAN READ /

**PGR3 PGR2 PGR** BE ATTENTIVE HERE

**FIRST to BE RUN** MUST BE EITHER **PGR OR PGR3**

### PGR

**WILL DO ONLY TRUE O1-U1 THK**
Ask you for LEAD and BIGHT NUMBER

Ask for choice MANDREL OR CYLINDER : This DOES NOT CHANGE THE CODING OF CROSSING as in any case we will use 1 for OVER and 0 for UNDER instead of / and \

Had we used / and \ it would have been necessary to keep in mind that

**/** means UNDER in a CYLINDER frame of reference and OVER in a MANDREL frame of reference

**** means OVER in a CYLINDER frame of reference and UNDER in a MANDREL frame of reference
This is an unnecessary complication and 1 and 0 are more practical ( the more so because ther are the only available coding for ROW coded knots as the / \ cannot be used.
OVER stay 1 and UNDER stay 0 in any case ! I have just left / and \ in the result for the fum but providing and automated changing using the choice given in mandrel/cylinder and will only be valid for the frame you have chosen while the coding in O and 1 will allow use in any frame.

IN THE STACK THE RESULTS WILL BE : ( 7L 5B Cylinder)

LEVEL 5 : { / \ / \ / } coding in / & \ terms ( should be at level 2.5 ! )
LEVEL 4 : { 0 1 0 1 0 1 } coding for LEFT/BOTTOM
LEVEL 3 : { 2 4 1 3 0 2 } complementary periodic bight order
LEVEL 2 : { 2 0 3 1 4 2 } periodic bight order
LEVEL 1 : { 1 0 1 0 1 0 } coding for RIGHT/TOP
STRICTLY ( to be 'in phase' with what SCHAAKE wrote. ) IT SHOULD HAVE BEEN
LEVEL 3 : { **0** 2 4 1 3 0 2 }
LEVEL 2 : { 2 0 3 1 4 2 **0** }

# PGR3

**WILL DO A THK SHADOW / CORDAGE ROUTE COMPLYING KNOT BUT WILL ALLOW YOU TO ENTER YOUR OWN CODING.**

You may now used that with pencil and paper and work yourself the coding for each b * 2 Half Periods or make it easy and now running directly after

# PGR2

TAKING THE RESULTS EITHER FROM PGR OR PGR3 DIRECTLY IT WILL COMPUTETHE CODING FOR EACH OF THE B * 2 HALF-PERIOD

PUT AS RESULTS IN THE STACK

LEVEL 1 : you get the PIN STEPS already computed as
{ A ; B ] a and B may be equal or not
For 7L you get PINS STEP : { 3 ; 4 } ( for an EVEN number of LEAD A and B will be equal )
My preference is to put the largest on the Top Bight rim ( Left rim on mandrel ) and the lowest on the Bottom Bight rim ( Right rim on mandrel) but it will be equivalent to do it the other way except that

( 7L 5B Cylinder) L>B L-B=2

| BOTTOM | TOP | will be | BOTTOM | TOP |
|---|---|---|---|---|
| Pin 1 | Pin 5 | | Pin 1 | Pin 4 |
| Pin 3 | Pin 2 | | Pin 3 | Pin 1 |
| Pin 5 | Pin 4 | | Pin 5 | Pin 3 |
| Pin 2 | Pin 1 | | Pin 2 | Pin 5 |
| Pin 4 | Pin 3 | | Pin 4 | Pin 2 |
| Pin 1 | | | Pin 1 | |

LEVEL 2 ( LEVEL 1 if you DROP the PINS STEPS ) will have the B*2th ( 10th) Half-Period coding
LEVEL 2 will have the B*2-1th ( 9th here ) coding and so on in going up

So still for ( 7L 5B Cylinder) L>B L-B=2
LEVEL 11 : HALF-TURN WRAP : 1 ( give you the number of 180° wrap in the first Half-Period )
LEVEL 10 : { 0 } SECOND Half Period one UNDER crossing
LEVEL 9 : { 0 } Third H-P
LEVEL 8 : { 0 0 } Fourth H-P
LEVEL 7 : { 0 0 } Fifth H-P
LEVEL 6 : { 0 0 0 1} Sixth H-P
LEVEL 5 : { 0 0 0 1} Seventh H-P
LEVEL 4 : { 0 0 1 0 1 } Eighth H-P
LEVEL 3 : { 0 0 1 0 1} Ninth H-P
LEVEL 2 : { 0 1 0 1 0 1} TENTH and last Haf-Period ( ORIGINAL CODING ENTERED )
LEVEL 1 : PINS STEP: [(3 ; 4 )

Now to clarify a bit the Number of Wrap notion and Free run another example
Cylinder 13L 4 B L>B L-B=9

PGR RESULTS :
LEVEL 5: { / \ / \ / \ / \ / \ }
LEVEL 4: { 0 1 0 1 0 1 0 1 0 1 0 1 }
LEVEL 3: { 3 2 1 0 3 2 1 0 3 2 1 0 }
LEVEL 2: { 0 1 2 3 0 1 2 3 0 1 2 3 }
LEVEL 1: { 1 0 1 0 1 0 1 0 1 0 1 0 }

PGR2 RESULTS :
LEVEL 9: HALF-TURN WRAP: 3 FIRTS H-P : FREE RUN with 3 ( 180° * 3 ) half turn before reaching the pin. LEVEL 8: { 1 1 1 } 2nd H-p
LEVEL 7: { 1 1 1 } 3rd H-P
LEVEL 6: { 0 1 0 1 0 1 } 4th H-P
LEVEL 5: { 0 1 0 1 0 1 } 5th H-P
LEVEL 4: { 1 0 1 1 0 1 1 0 1 } 6th H-P
LEVEL 3: { 1 0 1 1 0 1 1 0 1 } 7th H-P
LEVEL 2: { 0 1 0 1 0 1 0 1 0 1 0 1 } 8th and last H-P
LEVEL 1: PINS STEP: (6;7) it also means a FREE RUN

If you happen to find as result an EMPTY LIST such as { }

EXAMPLE 5L 6B L<B B-L=1

PGR RESULTS

LEVEL 5: { / \ / \ }
LEVEL 4: { 0 1 0 1 }
LEVEL 3: { 1 2 3 4 }
LEVEL 2: { 4 3 2 1 }
LEVEL 1: { 1 0 1 0 }

PGR2 RESULTS :

LEVEL 13: HALF-TURN WRAP: 0 ( the cordage goes directly form the bottom pin to the top pin without even making a half-turn around the cylinder FIRST H-P Pin 1 bottom to Pin 4 top

LEVEL 12 : { } no crossing ; FREE RUN SECOND H-P Pin 4 top to Pin 6 bottom
LEVEL 11: { } no crossing ; FREE RUN 3rd H-P Pin 6 bottom to Pin 3 top
LEVEL 10: { 0 } first crossing UNDER ) is only in the 4th H-P Pin 3 top to Pin 5 bottom
LEVEL 9: { 0 } 5th H-P
LEVEL 8: { 0 1 }
LEVEL 7: { 0 1 }
LEVEL 6: { 0 1 0 }
LEVEL 5: { 0 1 0 }
LEVEL 4: { 0 1 0 1 }
LEVEL 3: { 0 1 0 1 }
LEVEL 2: { 0 1 0 1 }
LEVEL 1: PINS STEP! ( 2 ; 3 )

Don’t hesitate to propose amelioration for this “starting document” or even writing one and give it to me !