

VIGAG V4.1b

© 1999-2001 by Edwin Córdoba

Note: the program does not work with the ROM version 1.05, is necessary update it.

1. Description of the program:

It is an excellent program in System Rpl for the analysis of statically determinate beams and statically indeterminate beams, which presents a comfortable and simple environment for the entrance of data. The program makes the analysis of cross-force, bending moment, angle and deflection of a beam, and the results store in a directory called *viga.tem* that regenerates whenever the program is executed. In addition a directory called *viga.dat* is created, in which the recorded data are located

2. Installation

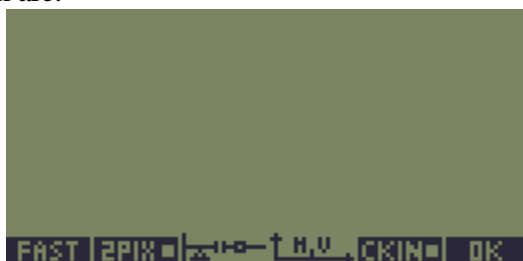
- Download the file onto your calculator and put the content on the stack.
- Type the number of the port in which you want to store the library in (for example 0)
- Press STO to store the library in that port
- Turn the calculator off and then on, or press ON-C, to finish installation of the library
- Purge the variable containing the library



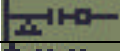



3. Operation of the program:



VIG	It is the command which executes the program
OPTIO	Options of the program
ABOUT	Information about the author




The options of the program are:



	If it is set , the program run more faster and in the moment of the processing of the information the calculator turnoff the display
	If it is set , the graphics use two pix for each point
	If it is set the graphics show the supports
	It allows to change the orientation of the axes for M and V
	If it is activated it checks inconsistencies that can have in the slides and pivots. If it is not activated in the case that is a inconsistency in some point, it comes from the following form: if flag 10 is activated (10 SF) the pivots and slides will locate to left of the load or support, and in opposite case they will be located to the right
	To Save changes

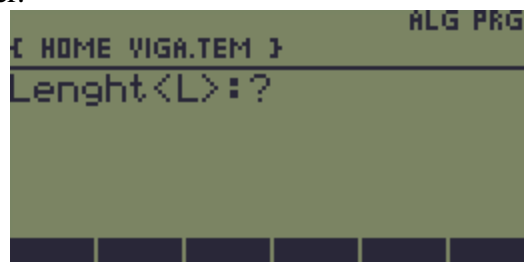


The program is executed with command VIG, and shows the following screen:

	To open to kept Data
	New Data
	Exit of the program

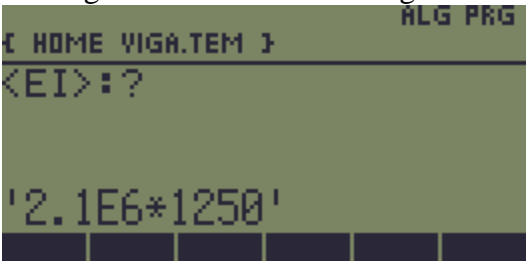
If you choose to open kept data, a list with all the archives available will appear, in this version the information is saved as Library Data and are not compatible with the before versions. (the program always will keep the data from the last beam calculated in a file called DATOS), or otherwise if you choose the option of new data the program will request the following information:

- **Length of the beam:** Total length of the beam, if it has intermediate supports, these will be entered later.








- **Rigidity of the beam $E \times I$ (Modulus of elasticity by the Inertia of the cross-sectional of the beam):** If only you is interested in the study of cross-force and bending moment, you should enter the value of 1 this variable, and not consider the

results of angles and deflections in the conditions of border that is in the reactions, neither considering the diagrams of deflection and angle of the beam.




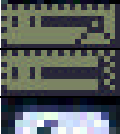
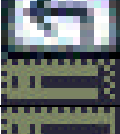


• Initial condition of the beam



	Initial condition of the beam: Pivoted
	Initial condition of the beam: Pivoted with initial deflection in the beam
	Initial condition of the beam: Embedded
	Initial condition of the beam: Embedded with initial angle and deflection in the beam
	Initial condition of the beam: Free end







- **Final condition of the beam**



	Final condition of the beam: Pivoted
	Final condition of the beam: Pivoted with final deflection in the beam
	Final condition of the beam: Embedded
	Final condition of the beam: Embedded with final angle and deflection in the beam
	Final condition of the beam: Free end

Next it will appear the following screen:



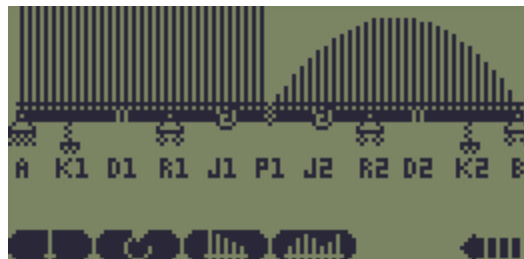
	Menu of pivots, slides and supports
	Menu of loads
	To open document kept
	Information about the properties of the beam
	Menu from editing from the loads
	To process the Data

- **Menu of pivots, slides, springs and supports**







	Intermediate Supports: list with the location of the intermediate supports of the beam
	Deflection in the Intermediate Supports: If there are a list with intermediate supports, it is possible to input a list with the deflection of the intermediate supports
	Pivots: list with the location of the pivots of the beam (in this points Moment=0)
	Slides: list with the location of the slides of the beam (in this points Cross-force =0)
	Lineal springs: A list with the position of the springs and a list with the lineal constants of the springs
	Clock springs: A list with the position of the springs and a list with the constants of the springs
	To back to the previous menu

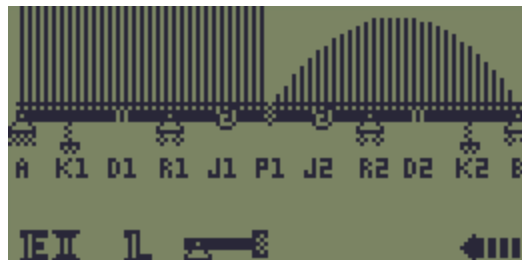
- **Menu of loads**







	Point load: <ul style="list-style-type: none"> • Value of the load, positive towards down • Position in where this apply the load
	Moment: <ul style="list-style-type: none"> • Value of the moment, Positive clockwise • Position in where this apply the moment
	Load distribute lineal: <ul style="list-style-type: none"> • Value of the initial load, positive towards down • Position in where is applied the initial load • Value of the final load, positive towards down • Position in where is applied the final load

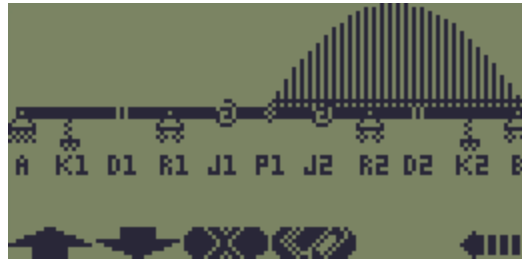
	Load distribute polynomial: <ul style="list-style-type: none"> • Vector that represent the coefficient of the polynomial of the load distribute. The polynomial can be entered using the absolute coordinates  (to the beginning of the beam) or using relative coordinates  in where the axis and begins in the beginning of the load distribute • Position in where begin the load • Position in where end the load
	To back to the previous menu

- **Menu of information about the properties of the beam**



	To Edit EI
	To Edit the length
	To Edit the boundary initial and final
	To back to the previous menu

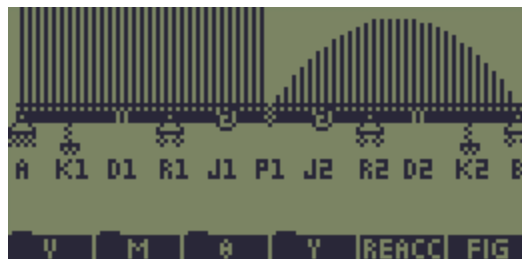
- Menu from editing from the loads



	The next load
	The pervious load
	To eliminate the load that is drawn
	To edit the load that is drawn
	To enter the initial and final conditions of the beam
	To back to the previous menu

4. Answers

the results are presented in separated directories:



	Analysis of cross-force
	Analysis of bending moment
	Analysis of angle of the beam
	Analysis of deflection of the beam
	List of reactions and conditions of border
	Image of state of loads of the beam

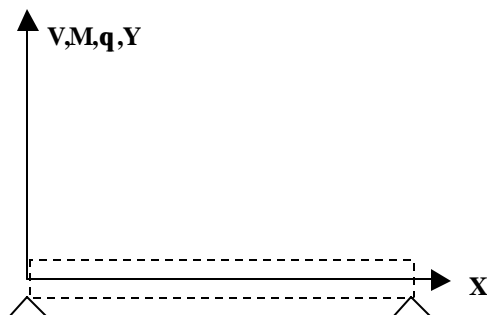
The directories V, M, θ , Y present the objects that will be described:



EVALX	It evaluates the function (V, M, θ , Y) to a distance X of the beam. The function needs that in the stack there is a real number, otherwise indicates error. (1: x -> 1: f(x))
PLOT	Diagram of the function (V, M, θ , Y) (->)
MAX	Maximum Point of function (V, M, θ , Y) (-> 1: (Xmax, fmax))
MIN	Minimum Point of function (V, M, θ , Y) (-> 1: (Xmin, fmin))
EQUA	List of the algebraic equations that define the function (V, M, θ , Y) to different ranks from the beam. The command executes the built in editor and return a list with the equation in all the rank of the. (-> 1: {{"X1<X<X2" 'f1(x)'} {"X2<X<X3" 'f2(x)'} {"X3<X<X4" 'f3(x)'} {"X4<X<X5" 'f4(x)'} ... })
MENU	To Back to the main menu (-> menu{ V M θ Y REACCIONES FIG})

NOTE

the equations and graphs are represented using a following system of coordinates:



But it is possible to change the direction of the axes for V and M, from the options of the program

5. Characteristics

Calculator : Hp49G
library: 1197
Checksum: A222 h
Bytes: 24153.5

6. AUTHOR

Edwin Córdoba
Calle 28 # 9-68 Lagos 1
Bucaramanga Colombia
<ecordoba74@yahoo.com>
<<http://www.geocities.com/ecordoba74>>