main

paceval / demo and examples / AppCalculation /

	paceval ...		now
	..		
📁	Windows 10 or 11		last year
📁	Windows 98 and later		last year
📁	media		12 minutes ago
📁	system-independent/source_public		last year
📄	Quick start guide for the paceval Calculation demo application.pdf		3 minutes ago
📄	readme.md		now

≡   readme.md

Quick start guide for the paceval "Calculation" demo application

paceval application "Calculation" GitHub -
https://github.com/paceval/paceval/tree/main/demo%20and%20examples/AppCalculation

Source paceval application "Calculation" GitHub -
https://github.com/paceval/paceval/tree/main/examples_sources/AppCalculation

INTRODUCTION

This demo application shows the capabilities of **pace***val.* in terms of its computational excellence. Please check the computing power and speed. In addition, it shows how precise and reliable Paceval works. The trusted interval computation "TINC" indicates the interval within which the actual result lies. And finally, you can plot the function for a selected variable.
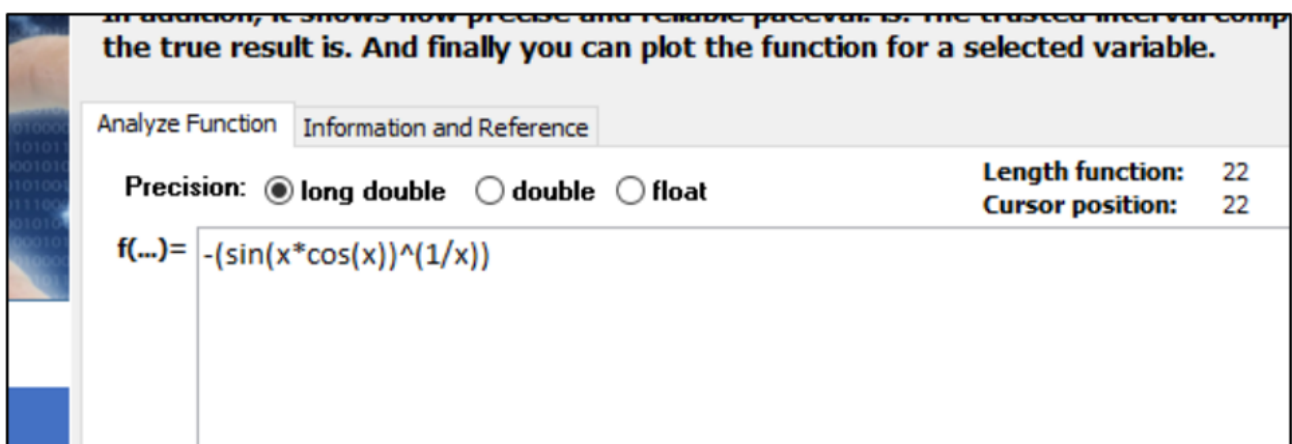
1. ENTER THE FORMULA IN THE TOOL AND ADJUST THE SETTINGS

You can type or copy your formula directly into the editor next to "f(...)=". Use the standard mathematical notations, e.g. for

$$f(x) = -\left(\sin\left(x * \cos(x)\right)^{\left(\frac{1}{x}\right)}\right)$$

you just type this in the editor:

```
-(sin(x*cos(x))^(1/x))
```


Just take a look at the **pace**val. PRODUCT BRIEF or select the "Quick reference" tab for a list of all supported arithmetic expressions and functions. **pace**val. has no limit on the length or number of variables. If you want, you can change the names of the variables in the grid. Just start with a letter (A-Z) or (a-z), subsequent characters can also be digits (0-9).
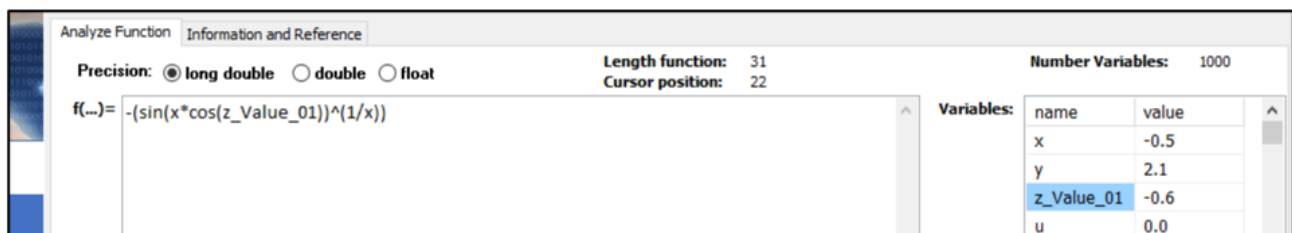
2. CALCULATE RESULTS

Provide the value of the variable you are interested in, then choose Calculate. When you press "Create object for computation and calculate" for the first time, the function is first analyzed, checked for errors, a cache is created and the results are displayed in "real time". If you now run the calculation again and only change the variable values, you will notice that the calculation time is now even further reduced, e.g. due to our caching methods it takes less than a millisecond. The exact speed always depends on the speed of your processor, of course.

3. CHECK THE PRECISION OF YOUR RESULT WITH "TINC"

Since computers are not mathematically exact, you should factor this into your calculations.

In general, **pace***val.* uses long double, double, or float precision. However, if you have a long formula and/or many variables, the result will be fuzzier even with high precision. But **pace***val.* offers a solution for this: The Trusted Interval Computation (TINC) provides a precise interval in which the "true" result can be found. Just select "On" for "Use Interval" and click "Calculate". **pace***val.* now shows a minimum and maximum value, which is the correct value. If you can't apply this in other programs, you may be surprised at the results and get into unforeseen scenarios.

Analyze Function | Information and Reference

Precision: ⦿ long double ⦿ double ⦿ float

Length function: 31
Cursor position: 31

f(...)= -(sin(x*cos(z_Value_01))^(1/x))

▷ Calculate - computation object is created

Creation time: <31ms
Calculation time: <1ms

Status: Creation 100% done - next step calculation only

= **Result:** -6.2171733678550569
long double

Use trusted interval computation (TINC)

⦿ TINC off   ⦿ TINC on

Interval min. result: -6.21717336785505721
long double

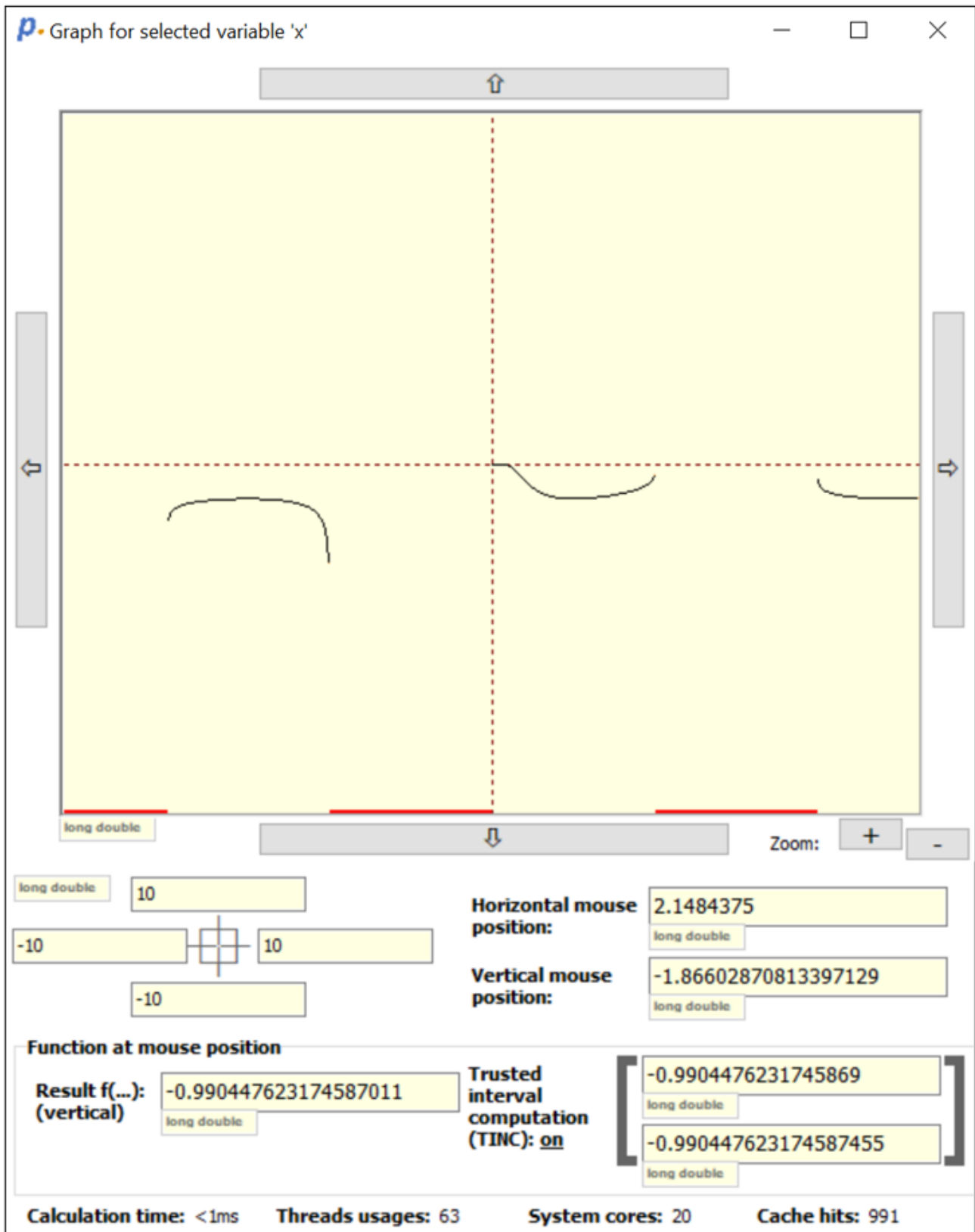**Interval max. result:** -6.21717336785505658
long double

Com
infor

4. DRAW AND EXAMINE THE GRAPH

You can plot the function for a selected variable by clicking "Graph for selected variable". In our example, we drew the graph for the variable "x".

Simply zoom in and out and select left and right, up and down to explore the area of interest to you.

p. Graph for selected variable 'x' — □ ✕

long double

long double 10

-10   10

-10

Horizontal mouse position: 2.1484375
long double

Vertical mouse position: -1.86602870813397129
long double

Function at mouse position

Result f(...): (vertical) -0.990447623174587011
long double

Trusted interval computation (TINC): on

[-0.9904476231745869
long double

-0.990447623174587455
long double]

Calculation time: <1ms   **Threads usages:** 63   **System cores:** 20   **Cache hits:** 991

4. CHANGE THE SOURCE CODE VERSION FOR YOUR OWN NEEDS

If you download the source code version of this demo application, you can easily adapt it to your needs or use the example code in your own application. For example, you could also draw 3D graphics.

Source paceval application "Calculation" GitHub -

https://github.com/paceval/paceval/tree/main/examples_sources/AppCalculation

mailto:info@paceval.com