# Text output in PAW: font and precision

The text aspect in **PAW** is controlled with two parameters:

1. **The text font**: selects among possible character shapes, as a roman font, a sans-serif font, etc.
2. **The text precision**: specifies how closely **PAW** must follow the current size and orientation attributes.

```
PAW > SET TFON ffp  | Title FONT (ff) and PREC (p)
PAW > SET GFON ffp  | Global title FONT (ff) and PREC (p)
PAW > SET VFON ffp  | axis Values FONT (ff) and PREC (p)
PAW > SET LFON ffp  | axis Labels FONT (ff) and PREC (p)
PAW > SET CFON ffp  | Comment FONT (ff) and PREC (p)
PAW > SET *FON ffp  | Set the same values for all

PAW > SET TXFP ffp  | ITX FONT (ff) and PREC (p)
```

Example:

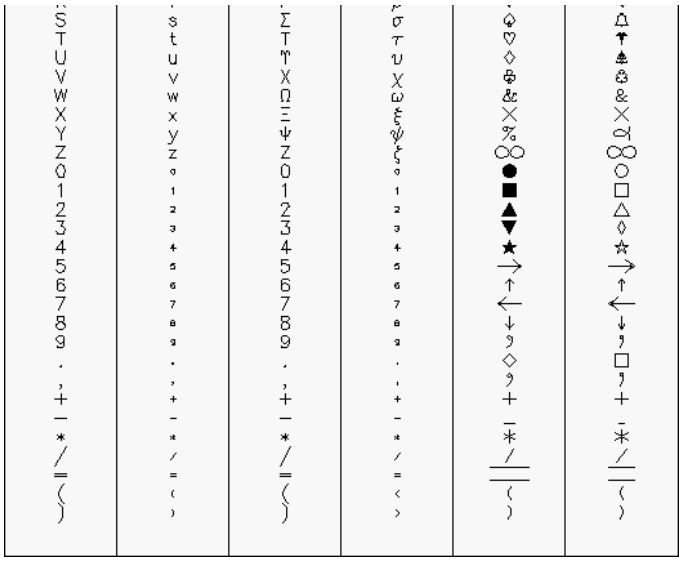
```
PAW > SET *FON -60  | the all the font to -6 (Helvetica-Bold) and all
                    | the precision to 0.
```

The possible PostScript fonts are:

| Font/Prec | PostScript Font Style | |
|---|---|---|
| -1/0 | *ABCDEFghijlk0123456789* | Times-Italic |
| -2/0 | **ABCDEFghijlk0123456789** | Times-Bold |
| -3/0 | ***ABCDEFghijlk0123456789*** | Times-BoldItalic |
| -4/0 | ABCDEFghijlk0123456789 | Helvetica |
| -5/0 | *ABCDEFghijlk0123456789* | Helvetica-Oblique |
| -6/0 | **ABCDEFghijlk0123456789** | Helvetica-Bold |
| -7/0 | ***ABCDEFghijlk0123456789*** | Helvetica-BoldOblique |
| -8/0 | ABCDEFghijlk0123456789 | Courier |
| -9/0 | *ABCDEFghijlk0123456789* | Courier-Oblique |
| -10/0 | **ABCDEFghijlk0123456789** | Courier-Bold |
| -11/0 | ***ABCDEFghijlk0123456789*** | Courier-BoldOblique |
| -12/0 | ΑΒΧΔΕΦγηιλκ0123456789 | Symbol |
| -13/0 | ABCDEFghijlk0123456789 | Times-Roman |
| -14/0 | ✡✢✣✤✥✦❇❈❉❊●❋✐✑✒✓✔✕✖✗✘✙ | ZapfDingbats |
| -15/0 | *ABCDEFghijlk0123456789* | Times-Italic |
| -16/0 | **ABCDEFghijlk0123456789** | Times-Bold |
| -17/0 | ***ABCDEFghijlk0123456789*** | Times-BoldItalic |
| -18/0 | ABCDEFghijlk0123456789 | Helvetica |
| -19/0 | *ABCDEFghijlk0123456789* | Helvetica-Oblique |
| -20/0 | **ABCDEFghijlk0123456789** | Helvetica-Bold |
| -21/0 | ***ABCDEFghijlk0123456789*** | Helvetica-BoldOblique |
| -22/0 | ΑΒΧΔΕΦγηιφλκ0123456789 | Symbol |
| -23/0 | ABCDEFghijlk0123456789 | Times-Roman |
| -24/0 | ✡✢✣✤✥✦❇❈❉❊●❋✐✑✒✓✔✕✖✗✘✙ | ZapfDingbats |

Font 0 with the precision 2 is the Software **HIGZ** font:

| Upper Roman | Lower Roman | Upper Greek | Lower Greek | Upper Special | Lower Special |
|---|---|---|---|---|---|
| A | a | Α | α | ± | ± |
| B | b | Β | β | \| | \| |
| C | c | Η | η | ✣ | ✡ |
| D | d | Δ | δ | $ | $ |
| E | e | Ε | ε | ! | ‼ |
| F | f | Φ | φ | # | # |
| G | g | Γ | γ | > | > |
| H | h | Χ | χ | ? | ? |
| I | i | Ι | ι | ∫ | ∫ |
| J | j | Ι | ι | : | : |
| K | k | Κ | κ | ; | ; |
| L | l | Λ | λ | < | < |
| M | m | Μ | μ | [ | [ |
| N | n | Ν | ν | ] | ] |
| O | o | Ο | ο | ≥ | ≤ |
| P | p | Π | π | { | { |
| Q | q | Θ | ϑ | } | } |
| R | r | Ρ | ρ | √ | √ |



The following table gives all the Postscript characters available in **PAW**. Note the *Euro* symbol is there (`\360` in greek or special):

| Input | Upper Roman | Upper Greek | Upper Special | Upper Zapf |
|---|---|---|---|---|
| A | A | Α | ± | ✡ |
| B | B | Β | \| | ✢ |
| C | C | Η | ∃ | ✣ |
| D | D | Δ | ∀ | ✤ |
| E | E | Ε | ! | ✥ |
| F | F | Φ | # | ✦ |
| G | G | Γ | > | ✧ |
| H | H | Χ | ? | ★ |
| I | I | Ι | ∫ | ☆ |
| J | J | Ι | : | ✪ |
| K | K | Κ | ; | ☆ |
| L | L | Λ | < | ✯ |
| M | M | Μ | [ | ★ |
| N | N | Ν | ] | ✯ |
| O | O | Ο | ≥ | ✯ |
| P | P | Π | { | ☆ |
| Q | Q | Θ | } | ✱ |
| R | R | Ρ | √ | ✲ |
| S | S | Σ | ♠ | ✳ |
| T | T | Τ | ♥ | ✳ |
| U | U | Υ | ♦ | ✴ |
| V | V | Χ | ♣ | ✳ |
| W | W | Ω | ≤ | ✴ |
| X | X | Ξ | × | ✵ |
| Y | Y | Ψ | % | ✶ |
| Z | Z | Ζ | ∞ | ✷ |
| 0 | 0 | 0 | ⊗ | ✐ |
| 1 | 1 | 1 | ⊕ | ✑ |
| 2 | 2 | 2 | ∅ | ✒ |
| 3 | 3 | 3 | ◊ | ✓ |
| 4 | 4 | 4 | • | ✔ |
| 5 | 5 | 5 | → | × |
| 6 | 6 | 6 | ↑ | ✖ |
| 7 | 7 | 7 | ← | ✗ |
| 8 | 8 | 8 | ↓ | ✘ |
| 9 | 9 | 9 | ↔ | ✚ |
| . | . | . | . | ✎ |
| , | , | , | , | ✐ |
| + | + | + | + | ✍ |
| - | - | − | ∠ | ✍ |
| * | * | * | ⟨ | ✍ |
| / | / | / | ÷ | ✏ |
| = | = | = | ≠ | ✝ |
| ( | ( | ( | ≡ | ✞ |
| ) | ) | ) | ″ | ✟ |

| Input | Lower Roman | Lower Greek | Lower Special | Lower Zapf |
|---|---|---|---|---|
| A | a | α | ≈ | ❂ |
| B | b | β | ≅ | ❂ |
| C | c | η | ⊥ | ❋ |
| D | d | δ | ∂ | ❊ |
| E | e | ε | ƒ | ❊ |
| F | f | φ | ∩ | ❊ |
| G | g | γ | ∪ | ❊ |
| H | h | χ | ⊃ | ❊ |
| I | i | ι | ⊇ | ❊ |
| J | j | ι | ⊄ | ❊ |
| K | k | κ | ⊂ | ✳ |
| L | l | λ | ⊆ | ● |
| M | m | μ | ∈ | ○ |
| N | n | ν | ∉ | ■ |
| O | o | ο | ∇ | □ |
| P | p | π | ∧ | ❒ |
| Q | q | θ | ∨ | □ |
| R | r | ρ | ⇔ | □ |
| S | s | σ | ⇐ | ▲ |
| T | t | τ | ⇑ | ▼ |
| U | u | υ | ⇒ | ◆ |
| V | v | χ | ⇓ | ❖ |
| W | w | ω | & | ◗ |
| X | x | ξ | ϖ | ❙ |
| Y | y | ψ | ~ | ❚ |
| Z | z | ζ | ℵ | ❚ |
| 0 | 0 | 0 | ⊗ | ✐ |
| 1 | 1 | 1 | ⊕ | ✑ |
| 2 | 2 | 2 | ∅ | ✒ |
| 3 | 3 | 3 | ◊ | ✓ |
| 4 | 4 | 4 | • | ✔ |
| 5 | 5 | 5 | → | × |
| 6 | 6 | 6 | ↑ | ✖ |
| 7 | 7 | 7 | ← | ✗ |
| 8 | 8 | 8 | ↓ | ✘ |
| 9 | 9 | 9 | ↔ | ✚ |
| . | . | . | . | ✎ |
| , | , | , | , | ✐ |
| + | + | + | + | ✍ |
| - | - | − | ∠ | ✍ |
| * | * | * | ⟨ | ✍ |
| / | / | / | ÷ | ✏ |
| = | = | = | ≠ | ✝ |
| ( | ( | ( | ≡ | ✞ |
| ) | ) | ) | ″ | ✟ |

| Input | Roman | Greek | Special | Zapf |
|---|---|---|---|---|
| { | { | { | { | ❴ |
| } | } | } | } | ❵ |
| \041 | ! | ! | ! | ✂ |
| \042 | " | ∀ | ∀ | ✁ |
| \043 | # | # | # | ✂ |
| \044 | $ | ∃ | ∃ | ✃ |
| \045 | % | % | % | ✄ |

| Input | Roman | Greek | Special | Zapf |
|---|---|---|---|---|
| \115 | M | Μ | [ | ★ |
| \116 | N | Ν | ] | ✯ |
| \117 | O | Ο | ≥ | ✯ |
| \120 | P | Π | { | ☆ |
| \121 | Q | Θ | } | ✱ |
| \122 | R | Ρ | √ | ✲ |
| \123 | S | Σ | ♠ | ✳ |

| | | | | |
|---|---|---|---|---|
| \046 | & | & | & | ✆ |
| \047 | ’ | ϶ | ϶ | ✇ |
| \050 | ( | ( | ≡ | ✈ |
| \051 | ) | ) | ″ | ✉ |
| \052 | * | * | ⟨ | ☛ |
| \053 | + | + | + | ☞ |
| \054 | , | , | , | ✌ |
| \055 | - | − | ∠ | ✍ |
| \056 | . | . | . | ✎ |
| \057 | / | / | ÷ | ✏ |
| \060 | 0 | 0 | ⊗ | ✐ |
| \061 | 1 | 1 | ⊕ | ✑ |
| \062 | 2 | 2 | ∅ | ✒ |
| \063 | 3 | 3 | ◊ | ✓ |
| \064 | 4 | 4 | • | ✔ |
| \065 | 5 | 5 | → | ✕ |
| \067 | 7 | 7 | ← | ✗ |
| \070 | 8 | 8 | ↓ | ✘ |
| \071 | 9 | 9 | ↔ | ✙ |
| \072 | : | : | : | ✚ |
| \073 | ; | ; | ; | ✛ |
| \074 | < | < | < | ✜ |
| \075 | = | = | ≠ | ✝ |
| \076 | > | > | > | ✞ |
| \077 | ? | ? | ? | ✟ |
| \100 | @ | ≅ | ≅ | ✠ |
| \101 | A | A | ± | ✡ |
| \102 | B | B | \| | ✢ |
| \103 | C | X | ∃ | ✣ |
| \104 | D | Δ | ∀ | ✤ |
| \105 | E | E | ! | ✥ |
| \106 | F | Φ | # | ✦ |
| \107 | G | Γ | > | ✧ |
| \110 | H | H | ? | ★ |
| \111 | I | I | ∫ | ☆ |
| \112 | J | ϑ | : | ✪ |
| \113 | K | K | ; | ✫ |
| \114 | L | Λ | < | ✬ |
| \174 | \| | \| | \| | ❝ |
| \175 | } | } | } | ❞ |
| \176 | ~ | ~ | ~ | ❞ |
| \241 | ¡ | ϒ | ϒ | ❡ |
| \242 | ¢ | ′ | ′ | ❢ |
| \243 | £ | ≤ | ≤ | ❣ |
| \244 | / | / | / | ❤ |
| \245 | ¥ | ∞ | ∞ | ❥ |
| \246 | ƒ | ƒ | ƒ | ❦ |
| \247 | § | ♣ | ♣ | ❧ |
| \250 | ¤ | ♦ | ♦ | ♣ |
| \251 | ’ | ♥ | ♥ | ♦ |
| \252 | “ | ♠ | ♠ | ♥ |
| \253 | « | ↔ | ↔ | ♠ |
| \254 | ‹ | ← | ← | ① |
| \255 | › | ↑ | ↑ | ② |
| \256 | fi | → | → | ③ |
| \257 | fl | ↓ | ↓ | ④ |
| \260 | à | ° | ° | ⑤ |
| \261 | – | ± | ± | ⑥ |
| \262 | † | ″ | ″ | ⑦ |
| \263 | ‡ | ≥ | ≥ | ⑧ |
| \264 | · | × | × | ⑨ |
| \265 | À | ∝ | ∝ | ⑩ |
| \266 | ¶ | ∂ | ∂ | ❶ |
| \267 | • | • | • | ❷ |
| \270 | ¸ | ÷ | ÷ | ❸ |
| \271 | ‼ | ≠ | ≠ | ❹ |
| \272 | ” | ≡ | ≡ | ❺ |
| \273 | » | ≈ | ≈ | ❻ |
| \274 | … | … | … | ❼ |
| \275 | ‰ | \| | \| | ❽ |
| \276 | â | — | — | ❾ |
| \277 | ¿ | ↵ | ↵ | ❿ |
| \300 | Ã | ℵ | ℵ | ① |
| \301 | ` | ℑ | ℑ | ② |
| \302 | ´ | ℜ | ℜ | ③ |
| \303 | ˆ | ℘ | ℘ | ④ |
| \304 | ˜ | ⊗ | ⊗ | ⑤ |
| \305 | ¯ | ⊕ | ⊕ | ⑥ |
| \306 | ˘ | ∅ | ∅ | ⑦ |
| \307 | ˙ | ∩ | ∩ | ⑧ |
| \310 | ¨ | ∪ | ∪ | ⑨ |
| \311 | ä | ⊃ | ⊃ | ⑩ |
| \312 | ˚ | ⊇ | ⊇ | ❶ |

| | | | | |
|---|---|---|---|---|
| \124 | T | T | ❤ | ✳ |
| \125 | U | Υ | ❖ | ✳ |
| \126 | V | ς | ♣ | ✳ |
| \127 | W | Ω | ≤ | ✳ |
| \130 | X | Ξ | × | ✳ |
| \131 | Y | Ψ | % | ✳ |
| \132 | Z | Z | ∞ | ✳ |
| \134 | \ | ∴ | ∴ | ✳ |
| \135 | ] | ] | ] | ✳ |
| \136 | ^ | ⊥ | ⊥ | ✳ |
| \137 | | | | ✿ |
| \140 | ` | ¬ | ¬ | ❀ |
| \141 | a | α | ≈ | ❁ |
| \142 | b | β | ≅ | ❂ |
| \143 | c | χ | ⊥ | ❃ |
| \144 | d | δ | ∂ | ❄ |
| \145 | e | ε | ƒ | ❄ |
| \146 | f | φ | ∩ | ❄ |
| \147 | g | γ | ∪ | ✳ |
| \150 | h | η | ⊃ | ✳ |
| \151 | i | ι | ⊇ | ✳ |
| \152 | j | φ | ⊄ | ✳ |
| \153 | k | κ | ⊂ | ✳ |
| \154 | l | λ | ⊆ | ● |
| \155 | m | μ | ∈ | ○ |
| \156 | n | ν | ∉ | ■ |
| \157 | o | ο | ∇ | □ |
| \160 | p | π | ∧ | ❒ |
| \161 | q | θ | ∨ | □ |
| \162 | r | ρ | ⇔ | □ |
| \163 | s | σ | ⇐ | ▲ |
| \164 | t | τ | ⇑ | ▼ |
| \165 | u | υ | ⇒ | ◆ |
| \167 | w | ω | & | ◗ |
| \170 | x | ξ | ϖ | ▌ |
| \171 | y | ψ | ~ | ▌ |
| \172 | z | ζ | ℵ | ▌ |
| \173 | { | { | { | ❺ |
| \313 | | ⊄ | ⊄ | ❷ |
| \314 | Å | ⊂ | ⊂ | ❸ |
| \315 | ˝ | ⊆ | ⊆ | ❹ |
| \316 | | ∈ | ∈ | ❺ |
| \317 | ˛ | ∉ | ∉ | ❻ |
| \320 | — | ∠ | ∠ | ❼ |
| \321 | ˇ | ∇ | ∇ | ❽ |
| \322 | Ç | ® | ® | ❾ |
| \323 | ˘ | © | © | ❿ |
| \324 | É | ™ | ™ | ➔ |
| \325 | è | ∏ | ∏ | → |
| \326 | È | √ | √ | ↔ |
| \327 | ê | · | · | ↕ |
| \330 | Ê | ¬ | ¬ | ↗ |
| \331 | ë | ∧ | ∧ | ↔ |
| \332 | Ë | ∨ | ∨ | ↗ |
| \333 | î | ⇔ | ⇔ | ↔ |
| \334 | Î | ⇐ | ⇐ | ➔ |
| \335 | ï | ⇑ | ⇑ | → |
| \336 | Ï | ⇒ | ⇒ | → |
| \337 | ñ | ⇓ | ⇓ | → |
| \340 | Ñ | ◊ | ◊ | ➡ |
| \341 | Æ | ⟨ | ⟨ | ➡ |
| \342 | ô | ® | ® | ➢ |
| \342 | ö | ® | ® | ➢ |
| \344 | Ô | ™ | ™ | ➢ |
| \345 | ò | Σ | Σ | ➡ |
| \346 | Ò | ⎛ | ⎛ | ➡ |
| \347 | û | ⎜ | ⎜ | ➡ |
| \350 | Ł | ⎝ | ⎝ | ➡ |
| \351 | Ø | ⎡ | ⎡ | ⇨ |
| \352 | Œ | ⎢ | ⎢ | ⇨ |
| \353 | º | ⎣ | ⎣ | ⇨ |
| \354 | Ù | ⎤ | ⎤ | ⇨ |
| \355 | ù | ⎥ | ⎥ | ⇨ |
| \356 | Ú | ⎦ | ⎦ | ⇨ |
| \357 | å | \| | \| | ⇨ |
| \360 | | € | € | |
| \361 | æ | ⟩ | ⟩ | ⇦ |
| \362 | Å | ⎮ | ⎮ | ➡ |
| \363 | ÿ | ⎛ | ⎛ | ➡ |
| \364 | Ÿ | ⎜ | ⎜ | ➡ |
| \365 | ı | ⎜ | ⎜ | ➡ |
| \366 | á | ⎟ | ⎟ | ➡ |
| \367 | Á | ⎟ | ⎟ | ➡ |
| \370 | ł | ⎠ | ⎠ | ➡ |
| \371 | ø | ⎫ | ⎫ | ➡ |

| | | | | |
|---|---|---|---|---|
| \372 | œ | ⎪ | ⎪ | ⇒ |
| \373 | ß | ⎭ | ⎭ | ⇔ |
| \374 | ù | ⎫ | ⎫ | ⇔ |
| \375 | Ù | ⎬ | ⎬ | ⇔ |
| \376 | | ⎭ | ⎭ | ⇛ |

The possible precisions are:

| Precision number | Effect |
|---|---|
| **0** | The font used on screen and on Postscript file are the same. On the screen the text is rotated and aligned but, for speed purpose, the size used is the available on the machine. The control characters special characters are not interpreted on the screen but are interpreted on the PostScript output. |
| **1** | The font used on the screen is the HIGZ-Software and on PostScript the one selected. So, on the screen the text is rotated, aligned and scaled correctly, the control are interpreted but the font used doesn't look like the one used on the PostScript output. |
| **2** | The font used on screen and on Postscript output are the same. On the screen the text is rotated, aligned and correctly scaled, the control characters are NOT interpreted but the font used looks like the one used on the PostScript output. |

In addition to the character font and precision, the text aspect can be modified via a set of control characters. These characters are embedded into the characters strings and are interpreted according to the rules defined in the HIGZ-software font table.

| List of escape characters and their meaning | | | |
|---|---|---|---|
| < | go to lower case (optional) | > | go to upper case (optional) |
| [ | go to greek (Roman = default) | ] | end of greek |
| " | go to special symbols | # | end of special symbols |
| ~ | go to ZapfDingbats | # | end of ZapfDingbats |
| ^ | go to superscript | ? | go to subscript |
| ! | go to normal level of script | & | backspace one character |
| $ | termination character (optional) | @ | escape |

Example:

```
For/File 44 paw.ps
       Meta 44 -111
       Size 40 20
       Next
       Sel 1
       Set CHHE 1
       Set TXFP -11
       Itx 0.2 1. 'L?em! = e J^[m]?&em! A?[m]! , J^[m]?&em!=l&^\261![ g?m]!l , M^j?&i! = [\345&?a]! A?[a! t^a]j?&i! '
       Set TXFP -10
       Itx 0.2 3.5 'L?em! = e J^[m]?&em! A?[m]! , J^[m]?&em!=l&^\261![ g?m]!l , M^j?&i! = [\345&?a]! A?[a! t^a]j?&i! '
       Close 44
```

The output on the screen is the following. Note that the 'octal characters' like \261 or \345 are never translated whatever the precision is.

$$L?em! = e\ J\text{^}[m]?\&em!\ A?[m]!\ ,\ J$$

$$L_{em} = e\ J^{\mu}_{em}\ A_{\mu}\ ,\ J^{\mu}_{em}=\bar{l}^{261}\ \gamma_{\mu} l\ ,\ M^{j}_{i} = \zeta 345 A_{\alpha}\ \tau^{\alpha j}_{i}$$

The output on the PostScript file is the same with precision 0 or 1.

$$L_{em} = e\ J^{\mu}_{em} A_{\mu},\ J^{\mu}_{em}=\bar{l}\ \gamma_{\mu} l\ ,\ M^{j}_{i} = \sum_{\alpha} A_{\alpha}\ \tau^{\alpha j}_{i}$$

$$L_{em} = e\ J^{\mu}_{em} A_{\mu},\ J^{\mu}_{em}=\bar{l}\ \gamma_{\mu} l\ ,\ M^{j}_{i} = \sum_{\alpha} A_{\alpha}\ \tau^{\alpha j}_{i}$$

**Note:** If the text output is produced with the command **TEXT** instead of **ITX** the font and precision used is **always** 0, 2.

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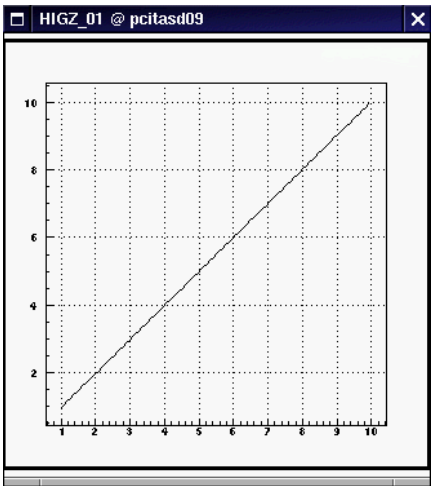
# How to access fit parameters after a fit operation ?

The following example illustrate how to access the fit parameters (eg. CHI2) **just after** a `HISTO/FIT` or `VECTOR/FIT` command.

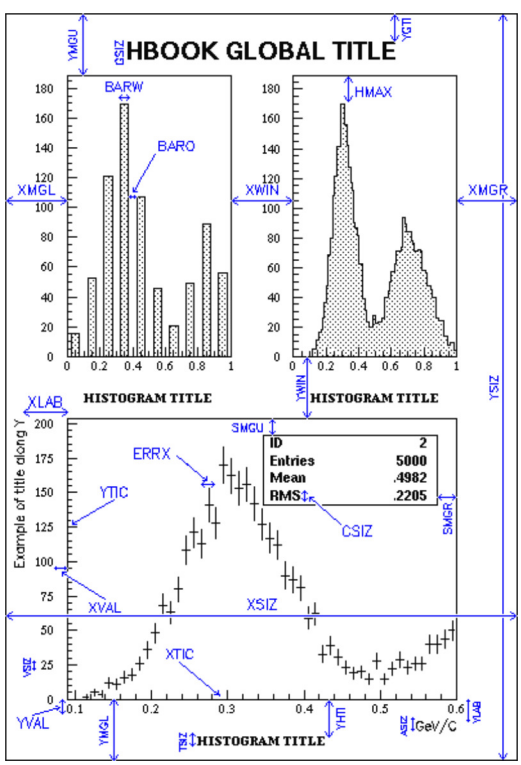
```
Vector/Del *
```

```
Vector/Cre x(10) r 1 2 3 4 5 6 7 8 9 10
Vector/Cre y(10) r 0.9 2.1 2.9 4.1 4.9 6.1 6.9 8.1 8.9 10.1
Vector/Cre ey(10) r 10*0.3
Vector/Cre chi2(1) r
*
Vector/Fit x y ey p1 e
*
Application COMIS Quit
      SUBROUTINE chiq
* NPFITS  Number of points used in the fit
* NFPAR   Number of free parameters
* FITCHI  Chisquare
* FITPAR  Values of parameters
* FITSIG  Errors on parameters
      COMMON/HCFITS/NCFITS,NPFITS,NFPAR,FITCHI,FITPAR(35),FITSIG(35)
     +              ,FITDER(35)
      vector chi2
      chi2(1)=fitchi
      END
Quit
*
Call chiq
Vector/Pri chi2
*
return
```

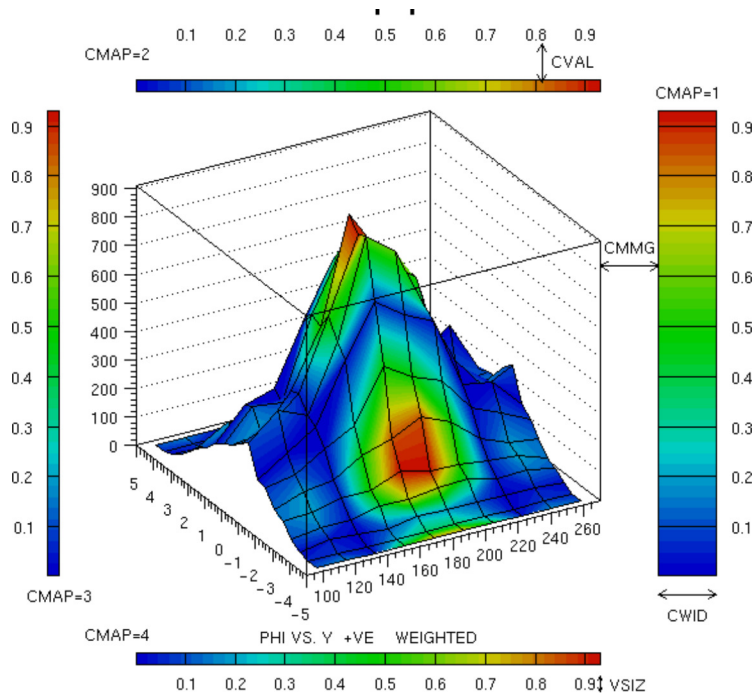



```
PAW > exe chi2
     *********************************************
     *                                           *
     * Function minimization by SUBROUTINE HFITV *
     * Variable-metric method                    *
     * ID =          0  CHOPT = E                *
     *                                           *
     *********************************************
 Convergence when estimated distance to minimum (EDM) .LT.  0.10E+01

 FCN=   1.077442     FROM MINOS     STATUS=SUCCESSFUL    18 CALLS       58 TOTAL
                     EDM=  0.38E-11    STRATEGY= 1      ERROR MATRIX ACCURATE

  EXT PARAMETER                  PARABOLIC         MINOS ERRORS
  NO.   NAME        VALUE          ERROR      NEGATIVE      POSITIVE
   1      P1      -0.33333E-01   0.20507      -0.20494       0.20494
   2      P2        1.0061       0.33054E-01  -0.33029E-01   0.33029E-01

 CHISQUARE = 0.1347E+00  NPFIT =    10

 CHI2(1) = 0.13468
PAW >
```

# A graphical view of the SET parameters.




The Color map parameters




---

# How to retrieve histogram information in macro ?

Use the **PAW** system function `$HINFO`.

```
$HINFO(id,'ENTRIES')  ........  Number of entries
$HINFO(id,'MEAN')  ...........  Mean value
$HINFO(id,'RMS')  ............  Standard deviation
$HINFO(id,'EVENTS')  .........  Number of equivalent events
$HINFO(id,'OVERFLOW')  .......  Content of overflow channel
$HINFO(id,'UNDERFLOW')  ......  Content of underflow channel
$HINFO(id,'MIN')  ............  Minimum bin content
$HINFO(id,'MAX')  ............  Maximum bin content
$HINFO(id,'SUM')  ............  Total histogram content
$HINFO(id,'NSLIX')  ..........  Number of X slices
$HINFO(id,'NSLIY')  ..........  Number of Y slices
$HINFO(id,'NBANX')  ..........  Number of X bands
$HINFO(id,'NBANY')  ..........  Number of Y bands
$HINFO(id,'NPROX')  ..........  Projection X (0 or 1)
$HINFO(id,'NPROY')  ..........  Projection Y (0 or 1)
$HINFO(id,'XBINS')  ..........  Number of bins in X direction
$HINFO(id,'XMIN')  ...........  Lower histogram limit in X direction
$HINFO(id,'XMAX')  ...........  Upper histogram limit in X direction
$HINFO(id,'YBINS')  ..........  Number of bins in Y direction
$HINFO(id,'YMIN')  ...........  Lower histogram limit in Y direction
$HINFO(id,'YMAX')  ...........  Upper histogram limit in Y direction
```

Example:

```
PAW > MESSAGE $HINFO(10,'ENTRIES')
```

Note that some other functions are available.

---

# How to use colours and hatching in PAW ?

The `SET` command allows to modify hatching and colours.

For low level drawing commands such as `PLINE`, `PMARKER`, `ITX`, `FAREA`, the colours are set via commands like

```
PAW > SET PLCI 2,
PAW > SET FACI 4.
```

When a command like `HISTO/PLOT` is performed, the hatching and colour attributes can be preset with the `SET` command. It allows to change the colour (COL) and the hatches type (TYP) of 4 main graphics object in the **PAW** plots:

```
Bxxx : Box around each histogram/function plot (zone).
Pxxx : Page. It may contain several zones.
Hxxx : Histogram
Fxxx : Function
```

`xxx` can be `TYP` or `COL`

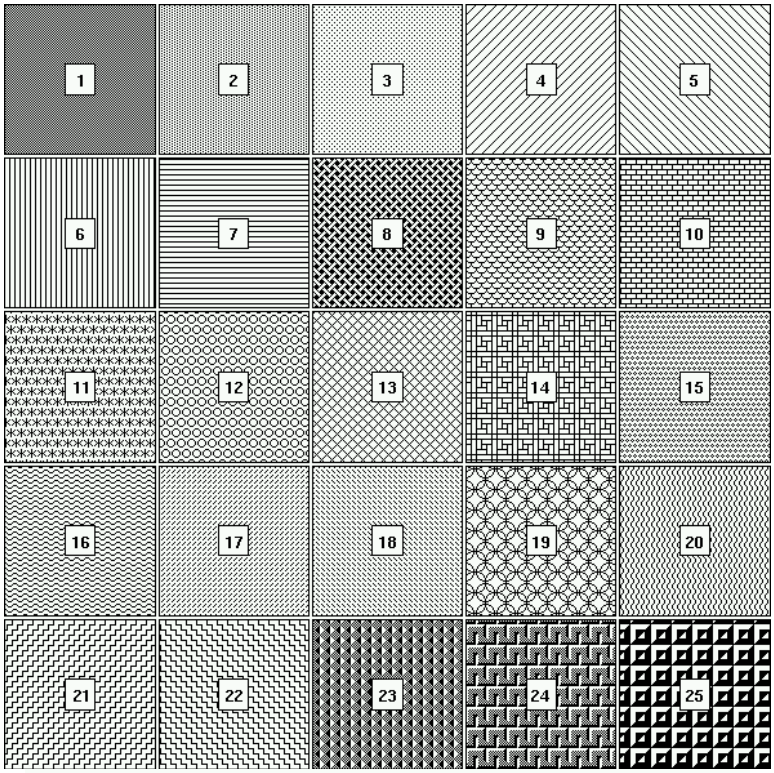
Example:

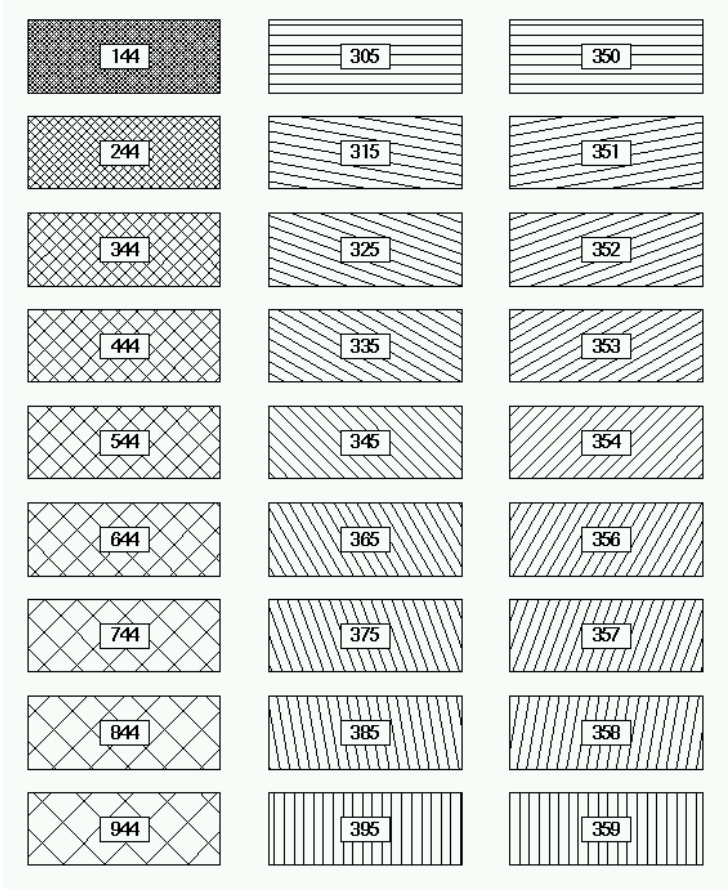
Example:

```
PAW > SET HCOL 2
```

Changes the histogram colour to 2 (red).

The values given to the parameters PTYP, BTYP and HTYP are fill area interior style. The two following figures show the available fill area interior styles:




The parameters PCOL, BCOL, HCOL are equivalent to PTYP, BTYP, HTYP, respectively , but instead of changing the hatch style, they change the colour of the same areas.

If PCOL, BCOL, HCOL are between 1 and 99, then only the contour of the corresponding area is changed. If they are between 1001 and 1099, then the surface is filled with

If FCOL, BCOL, HCOL are between 1 and 99, then only the contour of the corresponding area is changed. If they are between 1001 and 1099, then the surface is filled with the corresponding fill area colour index.

It is possible to specify with one SET command both the border and the inside color for the Histogram, Box Page, and Function ( HCOL, BCOL, PCOL, FCOL).
Example:

```
                +---- 1 The Histogram is filled
                |     0 Only the border is drawn
                |+--- Border color (here 2) if the histogram is filled
                ||++- Inside color (here 3) if the histogram is filled
                ||||  Border color if the histogram is not filled
                ||||
                VVVV
        SET HCOL 1203.
```

The same mechanism is also available for FCOL, BCOL and PCOL.

In addition, BCOL has two digits after the dot. The first one specifies the colour of the zone box shadowing and the second the colour of the statistic box shadowing.

See also the FAQ: **How to define the colour map for the option COLZ of HISTO/PLOT ?**