

Test the *alphabet* package

With the *alphabet* package, you can write Greek letters “by name” or as literal Unicode character in both, “text” and “math” mode. The mode determines whether the letters are taken from the text or math font. Just like Latin letters, the Greek counterparts are by default italic in math (capital letters upright without *fixmath* or *isomath*) and upright in text:

Text: L Λ l λ, emphasized text: *L* *Λ* *l* λ, math: *L* *Λ* *l* λ

So you can easily write a single Greek symbol (like Ψ or μ) or λογος in non-Greek text as well as ISO-conforming formulas with upright symbols for constants like $A = \pi r^2$ instead of $A = \pi r^2$.

Greek alphabet

Greek letters via Latin transscription in LGR font encoding:

A B Γ Δ E Z H Θ I K Λ M N Ξ O Π P Σ T Υ Φ X Ψ Ω
α β γ δ ε ζ η θ ι κ λ μ ν ξ ο π ρ σ ς τ υ φ χ ψ ω

Greek letters via default macros in LGR font encoding:

A B Γ Δ E Z H Θ I K Λ M N Ξ O Π P Σ T Υ Φ X Ψ Ω
α β γ δ ε ζ η θ ι κ λ μ ν ξ ο π ρ σ ς τ υ φ χ ψ ω

Greek letters via default macros in other font encoding (here T1):

A B Γ Δ E Z H Θ I K Λ M N Ξ O Π P Σ T Υ Φ X Ψ Ω
α β γ δ ε ζ η θ ι κ λ μ ν ξ ο π ρ σ ς τ υ φ χ ψ ω

Greek letters via Unicode input in T1 font encoding:

ΑΒΓΔΕΖΗΘΙΚΛΜΝΞΟΠΡΣΤΥΦΧΨΩ
αβγδεζηθικλμνξοπρσςτυφχψω

Greek letters in math (with “fixmath”):

$\Gamma \Delta \Theta \Lambda \Xi \Pi \Sigma \Upsilon \Phi \Psi \Omega$
 $\alpha \beta \gamma \delta \epsilon \zeta \eta \theta \iota \kappa \lambda \mu \nu \xi \pi \rho \sigma \tau \upsilon \phi \chi \psi \omega$

There are no math macros for Greek letters wich exist with similar shape in the Latin alphabet. Unicode input in math mode is currently not supported:

GDJLXPSUFYW
abgdezhjiklmnxprscufqyw

Έλληνικά (Ἑλληνικά) in PDF strings

With the alphabeta package, you get Greek letters in both, the document body and PDF metadata generated by hyperref if the input uses Unicode literals or macros. Wrapping in `\ensuregreek` ensures the right placement of the accents and breathings (before, not above capital letters). As the hyperref packages "PU" encoding uses the `\text...` macros, some diacritics are missing in the PDF data if the short macros are used (dasia dropped at the start of the heading in the PDF toc).

The generic macros result in warnings like

Package hyperref Warning: Token not allowed in a PDF string (Unicode):
(hyperref) removing ‘\TextOrMath ’ on input line 109.

Package hyperref Warning: Token not allowed in a PDF string (Unicode):
(hyperref) removing ‘\mathlambda’ on input line 109.

that can safely be ignored.

Greek in math $\sin^2 \alpha$

Ensure Greek in math continues to work in both text and PDF metadata:
 $\Gamma = \frac{\sin \alpha}{\cos \beta}.$

Diacritics

Shortcuts as well as named macros are set up for use with the Latin transcription.

Diacritics (except the dialytika) should be placed before capital letters and dropped with `MakeUppercase`:

$\acute{\alpha}$ $\acute{\epsilon}$ $\acute{\iota}$ $\grave{\eta}$ $\acute{\theta}$ $\acute{\upsilon}$ $\acute{\omega}$
 $\grave{\alpha}$ $\grave{\epsilon}$ $\grave{\iota}$ $\grave{\eta}$ $\grave{\theta}$ $\grave{\upsilon}$ $\grave{\omega}$
 $\acute{\alpha}$ $\acute{\epsilon}$ $\acute{\iota}$ $\acute{\eta}$ $\acute{\theta}$ $\acute{\upsilon}$ $\acute{\omega}$

Limitations

- Composition of diacritics (like `\>\')` fails in other font encodings:

$\acute{\alpha}$ $\acute{\epsilon}$ $\acute{\iota}$ $\acute{\eta}$ $\acute{\theta}$ $\acute{\upsilon}$ $\acute{\omega}$

- Long names (like `\accdasiaoxia`) work, however they do not select pre-composed characters (the difference becomes obvious if you drag-and-drop text from the PDF version of this document): $\alpha\alpha\alpha$ (LGR) vs. α (T1)
- MakeUppercase fails with composite diacritics in other font encodings.
- There is no kerning between Greek letters, if the font encoding is not LGR: compare ΑΥΑ (LGR) to ΑΥΑ (T1). Because of this (and for proper hyphenation), use of the Babel package and correct language setting is recommended for Greek quotes.

The `\ensuregreek` TextCommandDefault ensures that the argument is typeset with an LGR encoded font. This works with the Babel transscription ($\lambda\omicron\gamma\omicron\varsigma$), keeps kerning (if the kerning pair is inside the argument, ΑΥΑ), and allows iterative accent macros where pre-composed characters are selected (α).

The Unicode definitions in `lgrenc.dfu` use this to fix the handling of diacritics in pre-composed accented Unicode literals so literal input of, e.g., α works in any font encoding (cf. `greek-unicode.pdf`).