

Unicode request for letters with double tilde overlay

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2025 April 04

This proposal is for two IPA letters with a double tilde overlay, <ɲ̃> and <ɣ̃>, as atomic characters. Per the request of the SEW, it replaces a proposal for a single combining diacritic <̃>.

Proposal L2/23-347 requested various IPA letters with an overstruck middle tilde. The illustrations attested to 43 consonant and vowel letters with a single middle tilde, in addition to the 13 already in Unicode. It seems likely that any segmental IPA letter apart from the pharyngeal/epiglottals might be found with this diacritic. The SAH did not come to consensus to accept the letters as atomic characters, and suggested that such symbols instead be formed with U+0334 COMBINING TILDE OVERLAY and that graphic details such as <ð̃> for [ð̃], <β̃> for [β̃], and <ʂ̃> for [ʂ̃] be handled by the font.

However, that solution leaves us with a gap in coverage. IPA diacritics may be doubled to indicate a greater degree of the feature they represent. For example, Ladefoged 1971 and Ladefoged & Maddieson 1996 use [ẽ̃] for a heavily nasal vowel, [ẹ̃] for a heavily rhotic vowel, [ẽ̠] for a very back vowel, *etc.* (Ladefoged was president of the IPA from 1986 to 1991), and the IPA charts similarly illustrate this doubling convention with [ẽ̥̃] and [ẽ̦̃] for extra-high and extra-low tone, and with [ẽ̥̥̃] for extra stress. The middle tilde is similarly doubled per this convention. In IPA usage, doubling the middle tilde for a “very dark” sound has been used to distinguish pharyngealized from velarized consonants. This convention is corroborated by the Voice Quality Symbols (VoQS), which uses the double tilde on the carrier letter <ʋ̃̃> to indicate pharyngealized ‘voice’ of a word or utterance (Figure 1). [Note that in VoQS, ‘V’ means ‘voice,’ not ‘vowel.’]

When two combining diacritics do not stack but lie side by side, as in IPA U+030B ͂ and U+030F ͆, or Teuthonista U+1AB8 𐌶 and U+1ACA 𐌶̃, or when they overstrike a letter, a dedicated Unicode character is needed. This would suggest that a double-tilde diacritic <̃̃> be encoded. However, this approach was rejected by SEW, who requested that individual atomic characters be proposed instead, following the precedent of U+AB38 LATIN SMALL LETTER L WITH DOUBLE MIDDLE TILDE <ł̃̃>. That character was adopted as a Teuthonista symbol for a very dark [ł̃̃], but it is also used in IPA. (Teuthonista shares with the IPA the convention of doubling a diacritic for greater intensity.) Besides encoded <ł̃̃>, a double tilde is attested on <ɲ̃̃> and <ɣ̃̃>.

Characters

ñ 1DF83 LATIN SMALL LETTER N WITH DOUBLE MIDDLE TILDE

ƚ 1DF84 LATIN SMALL LETTER R WITH DOUBLE MIDDLE TILDE

Properties

1DF83;LATIN SMALL LETTER N WITH DOUBLE MIDDLE TILDE;Ll;O;L;;;;N;;;;;

1DF84;LATIN SMALL LETTER R WITH DOUBLE MIDDLE TILDE;Ll;O;L;;;;N;;;;;

Annotations

1DF83 LATIN SMALL LETTER N WITH DOUBLE MIDDLE TILDE

→ U+1D70 ñ Latin small letter n with middle tilde

1DF84 LATIN SMALL LETTER R WITH DOUBLE MIDDLE TILDE

→ U+1D72 ƚ Latin small letter r with middle tilde

References

Peter Ladefoged (1971) *Preliminaries to Linguistic Phonetics*.

Peter Ladefoged & Ian Maddieson (1996) *The Sounds of the World's Languages*. Blackwell.

John Laver (1994) *Principles of Phonetics*. Cambridge University Press.

Cynthia Shuken (1980) *Instrumental investigation of some Scottish Gaelic consonants*. University of Edinburgh.

Chart

The character in the white cell is proposed in this request. Grey cells are assigned, accepted by the UTC, or proposed elsewhere.

1DF00

Latin Extended-G

1DFFF

	1DF0	1DF1	1DF2	1DF3	1DF4	1DF5	1DF6	1DF7	1DF8	1DF9	1DFA	1DFB	1DFC	1DFD	1DFE	1DFF
0	ƒŋ	ɣ	ɔ̥	ɔ̥	Ǻ	Ǻ	ω	ǻ	Ǻ					ɣ	ɔ̥	ɔ̥
1	ɔ̥	ɔ̥	ɔ̥	ɔ̥	Ǻ	Ǻ	ɣ	ǻ	Ǻ					ɣ	ɔ̥	ɔ̥
2	ɔ̥	ɔ̥	ɔ̥	ɔ̥	Ǻ	Ǻ	ɣ	ǻ	Ǻ					ɣ	ɔ̥	ɔ̥
3	Ǻ	ǻ	ǻ	ǻ	Ǻ	Ǻ	ǻ	ǻ	Ǻ					ǻ	ǻ	ǻ
4	Ǻ	ǻ	ǻ	ǻ	Ǻ	Ǻ	ǻ	ǻ	Ǻ					ǻ	ǻ	ǻ
5	Ǻ	ǻ	ǻ	ǻ	Ǻ	Ǻ	ǻ	ǻ	Ǻ					ǻ	ǻ	ǻ
6	Ǻ	ǻ	ǻ	ǻ	Ǻ	Ǻ	ǻ	ǻ	Ǻ					ǻ	ǻ	ǻ
7	Ǻ	ǻ	ǻ	ǻ	Ǻ	Ǻ	ǻ	ǻ	Ǻ					ǻ	ǻ	ǻ
8	Ǻ	ǻ	ǻ	ǻ	Ǻ	Ǻ	ǻ	ǻ	Ǻ					ǻ	ǻ	ǻ
9	Ǻ	ǻ	ǻ	ǻ	Ǻ	Ǻ	ǻ	ǻ	Ǻ					ǻ	ǻ	ǻ
A	Ǻ	ǻ	ǻ	ǻ	Ǻ	Ǻ	ǻ	ǻ	Ǻ					ǻ	ǻ	ǻ
B	Ǻ	ǻ	ǻ	ǻ	Ǻ	Ǻ	ǻ	ǻ	Ǻ					ǻ	ǻ	ǻ
C	Ǻ	ǻ	ǻ	ǻ	Ǻ	Ǻ	ǻ	ǻ	Ǻ					ǻ	ǻ	ǻ
D	Ǻ	ǻ	ǻ	ǻ	Ǻ	Ǻ	ǻ	ǻ	Ǻ					ǻ	ǻ	ǻ
E	Ǻ	ǻ	ǻ	ǻ	Ǻ	Ǻ	ǻ	ǻ	Ǻ					ǻ	ǻ	ǻ
F	Ǻ	ǻ	ǻ	ǻ	Ǻ	Ǻ	ǻ	ǻ	Ǻ					ǻ	ǻ	ǻ

Figures

Articulatory settings			
labial adjustments		labialization	$\underset{w}{V}$ or V^w
		labiodentalization	$\underset{b}{V}$ or V^b
tongue-body adjustments	advanced and raised	palatalization	$\underset{j}{V}$ or V^j
	retracted and raised	velarization	$\underset{\text{~}}{V}$ or $V^{\text{~}}$
	retracted and lowered	pharyngealization	$\underset{\text{~}}{\text{~}}V$ or $V^{\text{~}\text{~}}$

Figure 1. Laver (1994: 423, fig 13.11). <V> is the default carrier for diacritics in VoQS. Laver distinguishes single-tilde <Ṽ> for velarization – equivalent to <V[~]> – from double-tilde <V̄> for pharyngealization – equivalent to <V^{~~}>.

$\underset{\text{~}}{V}$	$\left[\underset{\text{~}}{v}, \underset{\text{~}}{w}, \underset{\text{~}}{b}, \underset{\text{~}}{j}, \underset{\text{~}}{\text{~}} \right]$	velarised
•	$\left[\underset{\text{~}}{d}, \underset{\text{~}}{t} \right]$	friction
˘	$\left[\underset{\text{~}}{\gamma}, \underset{\text{~}}{f} \right]$	open approximation
˙	$\left[\underset{\text{~}}{l}, \underset{\text{~}}{r} \right]$	beginning voiceless ending voiced
˚	$\left[\underset{\text{~}}{l}, \underset{\text{~}}{r} \right]$	beginning voiced and ending voiceless
Δ	$\left[\underset{\text{~}}{t}, \underset{\text{~}}{d} \right]$	tongue tip articulation
▽	$\left[\underset{\text{~}}{t}, \underset{\text{~}}{d} \right]$	tongue blade articulation
⌈	$\left[\underset{\text{~}}{t}, \underset{\text{~}}{d} \right]$	dental plus alveolar
$\underset{\text{~}}{\text{~}}$	$\left[\underset{\text{~}}{\text{~}}, \underset{\text{~}}{\text{~}} \right]$	pharyngealized
ˆ	$\left[\underset{\text{~}}{n}, \underset{\text{~}}{\text{~}} \right]$	slightly palatalized

Figure 2. Shuken (1980: 34–35). Again, a single tilde indicates velarization and a double tilde pharyngealization, following the IPA convention of doubling a diacritic to indicate a greater degree of that feature, pharyngealization being “darker” than velarization. (In Shuken’s handwriting all tildes are reversed; the illustration for the double tilde is $\left[\underset{\text{~}}{\text{~}} \right]$.)

	1	2	3
L	$\frac{\text{L}^{\text{h}}}{\text{L}^{\text{v}}}$	$\frac{\text{L}^{\text{h}}}{\text{L}^{\text{v}}}$	$\frac{\text{L}^{\text{h}}}{\text{L}^{\text{v}}}$
N	$\frac{\text{N}^{\text{h}}}{\text{N}^{\text{v}}}$	$\frac{\text{N}^{\text{h}}}{\text{N}^{\text{v}}}$	$\frac{\text{N}^{\text{h}}}{\text{N}^{\text{v}}}$
R	$\frac{\text{R}^{\text{h}}}{\text{R}^{\text{v}}}$	$\frac{\text{R}^{\text{h}}}{\text{R}^{\text{v}}}$	$\frac{\text{R}^{\text{h}}}{\text{R}^{\text{v}}}$

Figure 3. Shuken (1980: 253). Pharyngealized <ɬ>, <ɳ> and <ʀ> vs velarized <ɮ>, <ɲ> and <ʁ> in the Outer Hebrides dialect of Scottish Gaelic. Pharyngealized [ɳ] is also recorded from Skye and Ross-shire.

ISO/IEC JTC 1/SC 2/WG 2
PROPOSAL SUMMARY FORM TO ACCOMPANY SUBMISSIONS
FOR ADDITIONS TO THE REPERTOIRE OF ISO/IEC 10646¹.

Please fill all the sections A, B and C below.

Please read Principles and Procedures Document (P & P) from std.dkuug.dk/JTC1/SC2/WG2/docs/principles.html for guidelines and details before filling this form.

Please ensure you are using the latest Form from std.dkuug.dk/JTC1/SC2/WG2/docs/summaryform.html.

See also std.dkuug.dk/JTC1/SC2/WG2/docs/roadmaps.html for latest Roadmaps.

A. Administrative

1. Title:	<div style="border: 1px solid black; padding: 2px; text-align: center;"><i>Letters with double tilde overlay</i></div>
2. Requester's name:	<div style="border: 1px solid black; padding: 2px;">Kirk Miller</div>
3. Requester type (Member body/Liaison/Individual contribution):	<div style="border: 1px solid black; padding: 2px; text-align: center;">individual</div>
4. Submission date:	<div style="border: 1px solid black; padding: 2px; text-align: center;">2025 April 04</div>
5. Requester's reference (if applicable):	<div style="border: 1px solid black; padding: 2px;"> </div>
6. Choose one of the following:	
This is a complete proposal:	<div style="border: 1px solid black; padding: 2px; width: 100px; margin: 0 auto;">yes</div>
(or) More information will be provided later:	<div style="border: 1px solid black; padding: 2px; width: 100px; margin: 0 auto;"> </div>

B. Technical – General

1. Choose one of the following:	
a. This proposal is for a new script (set of characters):	<div style="border: 1px solid black; padding: 2px;"> </div>
Proposed name of script:	<div style="border: 1px solid black; padding: 2px;"> </div>
b. The proposal is for addition of character(s) to an existing block:	<div style="border: 1px solid black; padding: 2px; width: 100px; margin: 0 auto;">yes</div>
Name of the existing block:	<div style="border: 1px solid black; padding: 2px;">Latin Extended-G</div>
2. Number of characters in proposal:	<div style="border: 1px solid black; padding: 2px; width: 100px; margin: 0 auto;">3</div>
3. Proposed category (select one from below - see section 2.2 of P&P document):	
A-Contemporary <input checked="" type="checkbox"/>	B.1-Specialized (small collection) <input type="checkbox"/>
C-Major extinct <input type="checkbox"/>	B.2-Specialized (large collection) <input type="checkbox"/>
F-Archaic Hieroglyphic or Ideographic <input type="checkbox"/>	E-Minor extinct <input type="checkbox"/>
	G-Obscure or questionable usage symbols <input type="checkbox"/>
4. Is a repertoire including character names provided?	
<div style="border: 1px solid black; padding: 2px; width: 100px; margin: 0 auto;">yes</div>	
a. If YES, are the names in accordance with the “character naming guidelines” in Annex L of P&P document?	
<div style="border: 1px solid black; padding: 2px; width: 100px; margin: 0 auto;">yes</div>	
b. Are the character shapes attached in a legible form suitable for review?	
<div style="border: 1px solid black; padding: 2px; width: 100px; margin: 0 auto;">yes</div>	
5. Fonts related:	
a. Who will provide the appropriate computerized font to the Project Editor of 10646 for publishing the standard?	
<div style="border: 1px solid black; padding: 2px;">Kirk Miller</div>	
b. Identify the party granting a license for use of the font by the editors (include address, e-mail, ftp-site, etc.):	
<div style="border: 1px solid black; padding: 2px;">SIL (Gentium Release)</div>	
6. References:	
a. Are references (to other character sets, dictionaries, descriptive texts etc.) provided?	
<div style="border: 1px solid black; padding: 2px; width: 100px; margin: 0 auto;">yes</div>	
b. Are published examples of use (such as samples from newspapers, magazines, or other sources) of proposed characters attached?	
<div style="border: 1px solid black; padding: 2px; width: 100px; margin: 0 auto;">yes</div>	
7. Special encoding issues:	
Does the proposal address other aspects of character data processing (if applicable) such as input, presentation, sorting, searching, indexing, transliteration etc. (if yes please enclose information)?	
<div style="border: 1px solid black; padding: 2px; width: 100px; margin: 0 auto;">yes</div>	

8. Additional Information:

Submitters are invited to provide any additional information about Properties of the proposed Character(s) or Script that will assist in correct understanding of and correct linguistic processing of the proposed character(s) or script. Examples of such properties are: Casing information, Numeric information, Currency information, Display behaviour information such as line breaks, widths etc., Combining behaviour, Spacing behaviour, Directional behaviour, Default Collation behaviour, relevance in Mark Up contexts, Compatibility equivalence and other Unicode normalization related information. See the Unicode standard at www.unicode.org for such information on other scripts. Also see Unicode Character Database (www.unicode.org/reports/tr44/) and associated Unicode Technical Reports for information needed for consideration by the Unicode Technical Committee for inclusion in the Unicode Standard.

¹ Form number: N4502-F (Original 1994-10-14; Revised 1995-01, 1995-04, 1996-04, 1996-08, 1999-03, 2001-05, 2001-09, 2003-11, 2005-01, 2005-09, 2005-10, 2007-03, 2008-05, 2009-11, 2011-03, 2012-01)

C. Technical - Justification

1. Has this proposal for addition of character(s) been submitted before?	no
If YES explain	
2. Has contact been made to members of the user community (for example: National Body, user groups of the script or characters, other experts, etc.)?	yes
If YES, with whom? <i>The author is a member of the user community.</i>	
If YES, available relevant documents:	
3. Information on the user community for the proposed characters (for example: size, demographics, information technology use, or publishing use) is included?	
Reference:	
4. The context of use for the proposed characters (type of use; common or rare)	phonetic
Reference:	
5. Are the proposed characters in current use by the user community?	yes
If YES, where? Reference: <i>see illustrations</i>	
6. After giving due considerations to the principles in the P&P document must the proposed characters be entirely in the BMP?	no
If YES, is a rationale provided?	
If YES, reference:	
7. Should the proposed characters be kept together in a contiguous range (rather than being scattered)?	no
8. Can any of the proposed characters be considered a presentation form of an existing character or character sequence?	no
If YES, is a rationale for its inclusion provided?	
If YES, reference:	
9. Can any of the proposed characters be encoded using a composed character sequence of either existing characters or other proposed characters?	no
If YES, is a rationale for its inclusion provided?	
If YES, reference:	
10. Can any of the proposed character(s) be considered to be similar (in appearance or function) to, or could be confused with, an existing character?	no
If YES, is a rationale for its inclusion provided?	
If YES, reference:	
11. Does the proposal include use of combining characters and/or use of composite sequences?	no
If YES, is a rationale for such use provided?	
If YES, reference:	
Is a list of composite sequences and their corresponding glyph images (graphic symbols) provided?	no
If YES, reference:	
12. Does the proposal contain characters with any special properties such as control function or similar semantics?	no
If YES, describe in detail (include attachment if necessary)	
13. Does the proposal contain any Ideographic compatibility characters?	no
If YES, are the equivalent corresponding unified ideographic characters identified?	
If YES, reference:	