

Unicode request for IPA diacritics above and one below

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This proposal, officially supported by the International Phonetic Association after evaluation by the IPA Alphabets, Charts and Fonts Committee (Nicolaidis 2024), requests twelve combining IPA and extIPA diacritics. The requested characters are raised variants of Unicode-supported diacritics below, and are intended for use on letters that have descenders or that already bear diacritics below. Historical $\langle \text{◌} \text{◌} \rangle$ are requested as a pair.

Positional variants of IPA diacritics-below

The 1996 IPA chart, reproduced in the 1999 *Handbook*, says that “diacritics may be placed above a symbol with a descender.” Such placement is common, as in voiceless $[\text{ɲ}^h]$ or syllabic $[\text{ɲ}^h]$, but also occurs to avoid the stacking of subscript diacritics, as with the apical fricative trill $[\text{ɽ}^h]$ in Figure 4.

Ladefoged (1993: 32 *fn*) notes that the diacritic-above option can lead to ambiguity, as there is potential conflict between nasalized $[\text{ɲ}^h]$ and creaky-voice $[\text{ɲ}^h]$, between centralized $[\text{y}^h]$ and breathy-voice $[\text{y}^h]$, and between rising-tone $[\text{ɲ}^h]$ and modal-voice $[\text{ɲ}^h]$. The wording of the 2020 IPA chart has therefore been changed to “some diacritics,” but does not specify which. In practice, any diacritic that would not be ambiguous (that is, any diacritic other than $\langle \text{◌} \text{◌} \text{◌} \rangle$) may occur above the letter.

One potentially problematic diacritic is the subscript minus $\langle \text{◌} \text{◌} \rangle$ (retracted articulation), which if placed above the letter might be mistaken for a macron $\langle \text{◌} \text{◌} \rangle$ (mid tone). Nonetheless, a superscript minus for retraction is attested in the literature (Figures 3–4). Typographers could address the distinction the same way they do U+0331 ◌ COMBINING MACRON BELOW and U+0320 ◌ COMBINING MINUS SIGN BELOW, for instance by making the minus, $\langle \text{◌} \text{◌} \rangle$, the same width as the plus sign $\langle \text{◌} \text{◌} \rangle$ (advanced articulation) and visibly shorter than the macron. It would perhaps be good practice not to use a minus-above in a document that also uses the macron, but such judgements are best left to the writer and publisher, and in any case the underlying data structure needs to be distinct.

The literature attests to most subscript IPA diacritics being placed above the letter, such as apical $[\text{ɹ}^h]$ and laminal $[\text{ɹ}^h]$ in Pavlík (2004), with the two missing diacritics appearing to be accidental gaps. Superscript variants of extIPA diacritics are rarer but have the support of the International Clinical Phonetics and Linguistics Association (ICPLA), which governs the extIPA: president Vesna Mildner, former president Martin Ball, vice-president Vesna Stojanovik and secretary Joanne Cleland (p.c. Nov. 2021). With the additional agreement of the Alphabets, Charts and Fonts Committee of the IPA, we request superscript Unicode characters for historical $\langle \text{◌} \text{◌} \rangle$ and for all modern IPA and extIPA diacritics.

Current Unicode support

The positional pairs of IPA and extIPA diacritics currently supported by Unicode are:

Diacritic	combining mark below	combining mark above
voiceless	U+0325 ◌̥	U+030A ◌̊
dental	U+032A ◌̦	U+0346 ◌̧ (<i>dentolabial</i> in extIPA)
more rounded	U+0339 ◌̙	U+0357 ◌̜
less rounded	U+031C ◌̣	U+0351 ◌̝
advanced	U+031F ◌̜	U+1AC8 ◌̞
syllabic	U+0329 ◌̩	U+030D ◌̋
non-syllabic	U+032F ◌̪	U+0311 ◌̌
raised	U+031D ◌̪	U+1DF5 ◌̍
lowered	U+031E ◌̫	U+1ADB ◌̎
labialized (<i>retired</i>)	U+032B ◌̭	U+1AC7 ◌̏
spread (<i>extIPA</i>)	U+034D ◌̮	U+20E1 ◌̐ (for mathematical use)
strong (<i>extIPA</i>)	U+0348 ◌̨	U+030E ◌̑
offset right (<i>extIPA</i>)	U+0354 ◌̬	U+1DFE ◌̒
offset left (<i>extIPA</i>)	U+0355 ◌̭	U+0350 ◌̓

The down tack above U+1ADB ◌̎ is in the Unicode pipeline. Originally part of this proposal, it was moved to L2/23-206R (Harrington diacritics) because it is attested in the Harrington corpus.

In addition to their combining forms, the four tacks have spacing variants that are intended for use when there is no room below the letter for a combining diacritic. Two are in use today: raised <◌̊> (U+02D4) for combining <◌̥> (U+031D), and lowered <◌̎> (U+02D5) for combining <◌̪> (U+031E). The other pair date from when they meant ‘advanced’ (fronted) and ‘retracted’ (backed) in the IPA: <◌̞> (U+AB6B) for combining <◌̜> (U+0319) and <◌̟> (U+AB6A) for combining <◌̝> (U+0318). The spacing variants can be awkward, for example when followed by a length sign <◌̐> or <◌̑>, and today the combining diacritics above are often preferred.

Needed support

Of the combining tacks above, we can attest to <◌̊>, <◌̧> and <◌̋> in the literature, <◌̌> with its old value of ‘retracted.’ The lack of attestation for <◌̍> would thus appear to be an accidental gap. <◌̍> is already present in Unicode for non-IPA use, and <◌̎> was recently accepted by the UTC, partially on IPA evidence; we therefore request the left and right tacks <◌̏> and <◌̐>.

but the rounded forms are the norm. The angular forms <◌̥> and <◌̦> would be misleading in IPA transcription because they recall the IPA letters <w> and <ɹ>, which differ from each other in voicing (voiceless [ɹ] being identified as either [w̥] or [x̥]) rather than in rounding.

Other historical diacritics, such as the palatal hook above illustrated in L2/24-50 *Letters with palatal hook*, are not requested.

Combining diacritics

IPA positional variants

- ◌̥ 1AE0 COMBINING LEFT TACK ABOVE. Figures 1–2.
- ◌̦ 1AE1 COMBINING RIGHT TACK ABOVE. Cf. Figure 3.
- ◌̧ 1AE2 COMBINING MINUS SIGN ABOVE. Figures 5–6.
- ◌̨ 1AE3 COMBINING INVERTED BRIDGE ABOVE. Figures 7–8.
- ◌̩ 1AE4 COMBINING SQUARE ABOVE. Figure 7.
- ◌̪ 1AE5 COMBINING SEAGULL ABOVE.

historical IPA

- ◌̫ 1AE6 COMBINING DOUBLE ARCH BELOW. Figures 11–12, 13.
- ◌̬ 1AE7 COMBINING DOUBLE ARCH ABOVE. Figure 17.

extIPA positional variants

- ◌̭ 1AE8 COMBINING EQUALS SIGN ABOVE.
- ◌̮ 1AE9 COMBINING LEFT ANGLE CENTERED ABOVE.
- ◌̯ 1AEA COMBINING UPWARDS ARROW ABOVE.
- ◌̰ 1AEB COMBINING DOUBLE RIGHTWARDS ARROW ABOVE.

Properties

1AE0;COMBINING LEFT TACK ABOVE;Mn;230;NSM;;;;;N;;;;;
 1AE1;COMBINING RIGHT TACK ABOVE;Mn;230;NSM;;;;;N;;;;;
 1AE2;COMBINING MINUS SIGN ABOVE;Mn;230;NSM;;;;;N;;;;;
 1AE3;COMBINING INVERTED BRIDGE ABOVE;Mn;230;NSM;;;;;N;;;;;
 1AE4;COMBINING SQUARE ABOVE;Mn;230;NSM;;;;;N;;;;;
 1AE5;COMBINING SEAGULL ABOVE;Mn;230;NSM;;;;;N;;;;;
 1AE6;COMBINING DOUBLE ARCH BELOW;Mn;220;NSM;;;;;N;;;;;
 1AE7;COMBINING DOUBLE ARCH ABOVE;Mn;230;NSM;;;;;N;;;;;
 1AE8;COMBINING EQUALS SIGN ABOVE;Mn;230;NSM;;;;;N;;;;;
 1AE9;COMBINING LEFT ANGLE CENTERED ABOVE;Mn;230;NSM;;;;;N;;;;;
 1AEA;COMBINING UPWARDS ARROW ABOVE;Mn;230;NSM;;;;;N;;;;;
 1AEB;COMBINING DOUBLE RIGHTWARDS ARROW ABOVE;Mn;234;NSM;;;;;N;;;;;

Linebreaking properties: LineBreak.txt

1AEB COMBINING DOUBLE RIGHTWARDS ARROW ABOVE should have the line breaking property GL.
All other characters should have the line-breaking property CM.

Annotations

The Unicode charts should make it clear that the IPA diacritics-above are positional variants, though those characters may have other meanings in non-IPA usage (e.g. U+030A COMBINING RING ABOVE and U+0311 COMBINING INVERTED BREVE ABOVE in orthography, or U+20E1 COMBINING LEFT RIGHT ARROW ABOVE in tensor notation). Per feedback from the SAH, a few annotations should also be added to combining Cyrillic and Coptic characters.

Code numbers in red need to be updated if the proposed code points they refer to are changed.

proposed characters:

1AE0 COMBINING LEFT TACK ABOVE

- positional variant of U+0318 combining left tack below
- U+0486 combining cyrillic psili pneumata
- U+2CF1 coptic combining spiritus lenis

1AE1 COMBINING RIGHT TACK ABOVE

- positional variant of U+0319 combining right tack below
- U+0485 combining cyrillic dasia pneumata
- U+2CF0 coptic combining spiritus asper

1AE2 COMBINING MINUS SIGN ABOVE

- positional variant of U+0320 combining minus sign below

1AE3 COMBINING INVERTED BRIDGE ABOVE

- positional variant of U+033A combining inverted bridge below

1AE4 COMBINING SQUARE ABOVE

- positional variant of U+033B combining square below

1AE5 COMBINING SEAGULL ABOVE

- positional variant of U+033C combining seagull below

1AE6 COMBINING DOUBLE ARCH BELOW

- = turned omega below
- positional variant of U+**1AE7** combining double arch above
- U+032B combining inverted double arch below
- U+033C combining seagull below

1AE7 COMBINING DOUBLE ARCH ABOVE

= turned omega above

- positional variant of U+1AE6 combining double arch below
→ U+1AC7 combining inverted double arch above

1AE8 COMBINING EQUALS SIGN ABOVE

- positional variant of U+0347 combining equals sign below

1AE9 COMBINING LEFT ANGLE CENTERED ABOVE

- positional variant of U+0349 combining left angle below
→ U+031A combining left angle above

1AEA COMBINING UPWARDS ARROW ABOVE

- positional variant of U+034E combining upwards arrow below

1AEB COMBINING DOUBLE RIGHTWARDS ARROW ABOVE

- U+0362 combining double rightwards arrow below is a positional variant

existing characters:

030A COMBINING RING ABOVE

- may be a positional variant of U+0325 combining ring below

030D COMBINING VERTICAL LINE ABOVE

- positional variant of U+0329 combining vertical line below

030E COMBINING DOUBLE VERTICAL LINE ABOVE

- a positional variant of U+0348 combining double vertical line below

0311 COMBINING INVERTED BREVE ABOVE

- may be a positional variant of U+032F combining inverted breve below

0318 COMBINING LEFT TACK BELOW

- U+1AE0 combining left tack above is a positional variant

0319 COMBINING RIGHT TACK BELOW

- U+1AE1 combining right tack above is a positional variant

031C COMBINING LEFT HALF RING BELOW

- U+0351 combining left half ring above is a positional variant

031D COMBINING UP TACK BELOW

- U+1DF5 combining up tack above is a positional variant

031E COMBINING DOWN TACK BELOW

- U+1ADB combining down tack above is a positional variant

031F COMBINING PLUS SIGN BELOW

- U+1AC8 combining plus sign above is a positional variant

0320 COMBINING MINUS SIGN BELOW

- U+1AE2 combining minus sign above is a positional variant

0325 COMBINING RING BELOW

- U+030A combining ring above is a positional variant

0329 COMBINING VERTICAL LINE BELOW

→ U+030D combining vertical line above is a positional variant

032A COMBINING BRIDGE BELOW

→ U+0346 combining bridge above is a positional variant

032B COMBINING INVERTED DOUBLE ARCH BELOW

= omega below

→ U+1AC7 combining inverted double arch above is a positional variant

032F COMBINING INVERTED BREVE BELOW

→ U+0311 combining inverted above is a positional variant

0339 COMBINING RIGHT HALF RING BELOW

→ U+0357 combining right half ring above is a positional variant

033A COMBINING INVERTED BRIDGE BELOW

→ U+1AE3 combining inverted bridge above is a positional variant

033B COMBINING SQUARE BELOW

→ U+1AE4 combining square above is a positional variant

033C COMBINING SEAGULL BELOW

→ U+1AE5 combining seagull above is a positional variant

0346 COMBINING BRIDGE ABOVE

= ExtIPA dentolabial

• may be a positional variant of U+032A combining bridge below

0347 COMBINING EQUALS SIGN BELOW

→ U+1AE8 combining equals sign above is a positional variant

0348 COMBINING DOUBLE VERTICAL LINE BELOW

→ U+030E combining double vertical line above is a positional variant

0349 COMBINING LEFT ANGLE BELOW

→ U+1AE9 combining left angle centered above is a positional variant

034D COMBINING LEFT RIGHT ARROW BELOW

→ U+20E1 combining left right arrow above is a positional variant

034E COMBINING UPWARDS ARROW BELOW

→ U+1AEA combining upwards arrow above is a positional variant

0350 COMBINING RIGHT ARROWHEAD ABOVE

• may be a positional variant of U+0355 combining right arrowhead below

0351 COMBINING LEFT HALF RING ABOVE

• may be a positional variant of U+031C combining left half ring below

0354 COMBINING LEFT ARROWHEAD BELOW

→ U+1DFE combining left arrowhead above is a positional variant

0355 COMBINING RIGHT ARROWHEAD BELOW

→ 0350 combining right arrowhead above is a positional variant

0357 COMBINING RIGHT HALF RING ABOVE

- may be a positional variant of U+0339 combining right half ring below

0362 COMBINING DOUBLE RIGHTWARDS ARROW BELOW

- U+1AEB combining double rightwards arrow above is a positional variant

0485 COMBINING CYRILLIC DASIA PNEUMATA

- U+0314 combining reversed comma above
- U+1AE1 combining right tack above
- U+2CF0 coptic combining spiritus asper

0486 COMBINING CYRILLIC PSILI PNEUMATA

- U+0313 combining comma above
- U+1AE0 combining left tack above
- U+2CF1 coptic combining spiritus lenis

1AC7 COMBINING INVERTED DOUBLE ARCH ABOVE

= omega above

- positional variant of U+032B combining inverted double arch below

1AC8 COMBINING PLUS SIGN ABOVE

- positional variant of U+031F combining plus sign below

1AC9 COMBINING DOUBLE PLUS SIGN ABOVE

- positional variant of U+1ACA combining double plus sign below

1ACA COMBINING DOUBLE PLUS SIGN BELOW

- U+1AC9 combining double plus sign above is a positional variant

1ADB COMBINING DOWN TACK ABOVE

- may be a positional variant of U+031E combining down tack below

1DF5 COMBINING UP TACK ABOVE

- may be a positional variant of U+031D combining up tack below

1DFE COMBINING LEFT ARROWHEAD ABOVE

- may be a positional variant of U+0354 combining left arrowhead below

20E1 COMBINING LEFT RIGHT ARROW ABOVE

= used in tensor notation

- may be a positional variant of U+034D combining left right arrow below

2CF0 COPTIC COMBINING SPIRITUS ASPER

- U+0314 combining reversed comma above
- U+0485 combining cyrillic dasia pneumata
- U+1AE1 combining right tack above

2CF1 COPTIC COMBINING SPIRITUS LENIS

- U+0313 combining comma above
- U+0486 combining cyrillic psili pneumata
- U+1AE0 combining left tack above

Chart

Greyed-out cells have already been assigned or (light grey) are requested in other proposals.

Combining Diacritical Marks Extended

	1AB0	1AFF			
	1AB	1AC	1AD	1AE	1AF
0					
1					
2					
3					
4					
5					
6					
7					
8					
9					
A					
B					
C					
D					
E					
F					

References

- Jaime de Angulo & D. J. (1937) kantəni:z daɪələkt əv tʃami:z. *Le Maître Phonétique*, vol. 15 (52), no. 60 (Octobre-Décembre).
- Charles-James Bailey (1985) *English phonetic transcription*. SIL.
- Luciano Canepari (1983) *Phonetic Notation / La notazione fonetica*. Cafoscarina.
- John Catford (1972) Labialisation in Caucasian Languages, with Special Reference to Abkhaz. In Rigault & René, eds., *Proceedings of the seventh International Congress of Phonetic Sciences / Actes du Septième Congrès international des sciences phonétiques (Held at the University of Montreal and McGill University, 22–28 August 1971 / Tenu à l' Université de Montréal et à l' Université McGill, 22–28 août 1971)*, p. 679–682.
- Martin Duckworth, George Allen, William Hardcastle & Martin Ball (1990), Extensions to the International Phonetic Alphabet for the transcription of atypical speech. *Clinical Linguistics & Phonetics*, 4 (4) 273–280.
- International Phonetic Association (1999) *Handbook of the International Phonetic Association*. Cambridge University Press.
- Otto Jespersen & Holger Pedersen (1926) *Phonetic Transcription and Transliteration: Proposals of the Copenhagen Conference, April 1925*. Oxford University Press.
- Kasatkin: Л.Л. Касаткин, ed. (2001) *Русский язык*. Akademija Press.
- John Kelly & John Local (1989) *Doing Phonology*. Manchester University Press.
- Roger Lass (1984) *Phonology: An Introduction to Basic Concepts*. Cambridge University Press.
- Katerina Nicolaidis (2024) 'Unicode support for historical and para-IPA letters.' Letter submitted to the Unicode Technical Committee, 01 January 2024. [L2/24-049](#).
- Florin-Teodor Olariu, Veronica Olariu, Silviu Bejinariu & Vasile Apopei (2007) Los atlas lingüísticos rumanos. *Revista Española de Lingüística* 37, p. 215–246.
- Radoslav Pavlík (2004) Slovenské hlásky a medzinárodná fonetická abeceda (Slovak Speech Sounds and the International Phonetic Alphabet). *Jazykovedný časopis*, 55 (2) 87–109.
- Cynthia Shuken (1980) *Instrumental investigation of some Scottish Gaelic consonants*. University of Edinburgh.
- Smith-Stark (2005) Phonological description in New Spain. In Zwartjes & Altman (eds.) *Missionary Linguistics II (Lingüística misionera II): Orthography and Phonology*. John Benjamins.

Figures

Combining tacks above

Three of the four tacks are attested in the literature. The fourth is an accidental gap.

ciò possono liberamente predispor
che li segua, per es. *tonda o stesa*:
n_i l_u l_a l_i k_u k_a k_i] &c (F

Figure 1. Canepari (1983: 169). Here the tack has its old IPA value of *retracted*.

Гласный [э̣] произносится под ударением после твердых
согласных: ант[э̣]нна, м[э̣]р, ш[э̣]ст.

[ä] — гласный, продвинутый вперед и вверх на всем
протяжении звучания;
[ạ̈] — гласный, отодвинутый назад; для обозначения сдвига
гласного назад или вперед используется стрелка над бук-
вой с развернутыми «крылышками»;

Figure 2. Kasatkin (2001: 311, 305). Here again with the old IPA values of *retracted* (*отодвинутый назад*).

I. Modificación de la duración de la vocal:

- abreviación [por ejemplo]: ē̇, ē̈, ē̉, ē̊
- semialargamiento [por ejemplo]: ē̇̇, ē̇̈, ē̇̉, ē̇̊
- alargamiento [por ejemplo]: ē̄, ē̄̇, ē̄̈, ē̄̉, ē̄̊

Figure 3. Olariu et al. (2007: 228). A *long right tack* indicating a semi-long vowel. This should probably be analyzed as a struck macron rather than as a tack, striking the macron (which indicates a long vowel) to indicate a semi-long vowel.

ako [ɹ]. Použitím znamienka apikálnosti je slovenské /r/ konfrontačne odlišené napr. od postalveolárnej artikulácie [ɹ̠] a dentálnoalveolárnej artikulácie [ɹ̥] v malajálamčine, alebo od frikatívnej formy apikálnej artikulácie [ɹ̥] v češtine (Laver, 1994; Handbook of the IPA, 1999 a i.).

navrhol profesor P. Ladefoged⁷ (UCLA), je použitie nazalizovaného velárneho aproximantu [ũ̃]. Obidva spôsoby majú svoje nedostatky, no zdá sa nám, že lepšie je v tomto prípade použiť znak [ɲ̃]. Sú na to dva dôvody. Po prvé, použitie symbolu [ɲ] a znamienka [̃] je systémovejšie, pretože podobným spôsobom transkribujeme aj

Figure 4. Pavlík (2004: 102). Uptack and downtack in retypesetting from the IPA Handbook. The downtack was moved from this proposal to L2/23-206R.

Combining minus above

The combining minus above is used specifically for retraction, as in post-uvular [q̠], contrasting with the macron used for length or tone. The double minus (extra-retracted) [q̠̠] in Figure 8 is semantically distinct from the extIPA double macron (class-2 occlusion) [p̠̠].

[æ:] (*bad, fast*), a nasalized version [æ̃:] (*hand*), and a short retracted and lowered [æ̠] (*carry*). So /æ/ stands for an AREA in the vowel space, not a point, as shown in (7.12).

Figure 5. Lass (1984: 135). An over-minus indicating retracted articulation. On a vowel such as this, a macron would indicate mid tone. The subscript dot and ogonek-like diacritics are the pre-Kiel convention for raised and lowered articulation.

(7.68)

r	ɾ		ɹ̠	ɹ̠̠	ɻ
	l	ɭ		l	ɭ
	l:	ɭ:		l:	ɭ:
	Kannada			Malayalam	

(/ɹ̠/) is an advanced alveolar trill, (/ɹ̠̠/) is a retracted one; /ɻ/ is a

Figure 6. Lass (1984: 158). An over-minus on [ɹ̠] explicitly indicating retracted articulation (blue), paired with an over-plus on [ɹ̠̠] indicating advanced articulation (red).

We refer to these resonance categories as palatalised, clear, half-clear, central, half-dark, dark and velarised. Using **C** as a symbol for any consonantal symbol we notate them using diacritics thus:

ç ç $\overset{+}{\underset{-}{c}}$ $\overset{+}{\underset{-}{c}}$ $\overset{-}{\underset{-}{c}}$ e e

Figure 7. Kelley & Local (1989: 73). Combining <̂> with the minus-below necessarily moved above the letter. The combining schwa will be requested separately.

d̥̄	k̥̄	m̥̄	h̥̄
d̥̄̄	k̥̄̄	m̥̄̄	ç̥̄̄

Figure 8. Kelly & Local (1989: 219). Single and double minus above, for backed [ȳ] and more backed [ȳ̄]. Vowels without descenders are transcribed with minus below: <ē, ē̄> etc.

Combining bridge and square above

Hlásky [š] a [ž] sú v IPA identifikovateľné priesečníkom frikatívnosti a postalveolárnosti. V slovenčine sú tieto hlásky artikulované apikálne a budeme ich transkribovať ako [š̺] a [ž̺]. V niektorých jazykoch, napr. v angličtine, môžu byť fonémy /ʃ, ʒ/ realizované aj laminálne – [š̺̺], [ž̺̺] (Jones, 1960; Skaličková 1982 a i.). Znaky [š̺]

Znak [č], ktorý (s rovnakou platnosťou ako u nás) nájdeme aj v mnohých amerických slovníkoch, môžeme definovať ako tesnú realizáciu hlások [t] a [š], ktoré sú v IPA reprezentované symbolmi [t̺] a [š̺]. Uvedená afrikáta sa realizuje apikálne, a preto ju budeme v IPA transkribovať ako [t̺̺].

Figure 9. Pavlík (2004: 103–104). Contrast of apical [š̺, ž̺] and laminal [š̺̺, ž̺̺]. The equivalence of [t̺] and [š̺] shows that the diacritics above and below are synonymous. Translation:

The sounds [š] and [ž] are identifiable in IPA by the intersection of fricative and postalveolality. In Slovak, these sounds are articulated apically and we will transcribe them as [š̺] and [ž̺]. In some languages, e.g. in English, the phonemes /ʃ, ʒ/ can also be realized laminally – [š̺̺], [ž̺̺] ...

The letter [č], which (with the same value as in our country) can also be found in many American dictionaries, can be defined as a close realization of the sounds [t] and [š], which are represented by the symbols [t̺] and [š̺] in the IPA. The mentioned affricate is realized apically, and therefore we will transcribe it in IPA as [t̺̺].

	Bilabiály	Labio- dentály	Alveoláry	Postal- veoláry	Palatály	Veláry	Glotá- ly
Explozívny	p b		t̪ d̪		c ɟ	k g	
Nazály	m	ɱ	ɳ ̰ ̱		ɲ	ŋ ̰	
Vibranty			ɹ ̰ ̱				
Jednokmitové hlásky			ɻ				
Frikatívy		f v	s̺ z̺	ʃ ʒ̥		x ɣ	ɦ
Afrikáty			t͡s̺ d͡z̺	t͡ʃ̥ d͡ʒ̥			
Centrálne aproximanty	w	ʋ				ɨ ̰	
Laterálne aproximanty			l̪ ̰ ̱				

Tab. 3. Tabuľka slovenských spoluhlások v transkripcii IPA.

Figure 10. Pavlík (2004: 107). Legend: Table of Slovak consonants in IPA transcription. Note the subscripts-above <̰> (blue) and <̱, ̰> (red).

Combining turned omega (double arch)

ω	[ɹ̰]	labialized
+ [k̰, ɸ̰]		advanced
- [t̰, ɹ̰]		retracted
~ [ɻ̰, ʒ̰]		nasalization
ɹ̰	[ɻ̰]	closer
ɹ̰	[ɻ̰]	more open
:	[i:]	long
.	[ḭ]	half-long
ω	[ɹ̰]	less rounded

Figure 11. Shuken (1980: 34). <̰> is used for labialized and turned <̰> for the opposite. This is the same usage as in the next figure.

13. *Labialization and Unrounding*

For labialization (lip-rounding) the sign [ω] under the letter, e. g. [p_ω, t_ω], was recommended: it recalls the letter *w*.

The same sign may exceptionally be applied to a vowel-

AND TRANSLITERATION

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letter, though in most cases the rounded vowels have separate alphabetical signs.

For unrounding of rounded vowels the inverse sign [ω̄] may be used, e. g. [ū].

Figure 12. Jespersen & Pedersen (1926: 18–19). <ω> “recalls the letter *w*.” The turned omega <ω̄> is graphically distinct from the seagull for linguo-labial, U+033C <ɸ>, which is iconic for the shape of the upper lip.

<p>kansønænts : p', t' (alviælə), k', k'_ω p, t (dentl), k, k'_ω².</p>	<p>'k'u pul tægεðə</p>
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Figure 13. de Angulo & D. J. (1937: 69, 70). <ω> for labialization has an omega shape in other early material. It is even set in italic typeface, as Greek script typically was at the time.

<p>round [σ] (= [σ_ω])</p>	<p>Rounded — [ω]</p>
	<p>Unrounded — [ω̄]</p>
<p><u>ssh!</u> has a strongly rounded [s̄_ω] everywhere.</p>	

Figure 14. Bailey (1985: xxi, 58, 112). A later example of an omega shape in a publication not from the IPA. Associated notes explain that adding <ω> to a rounded segment indicates “over-rounding,” a term sometimes used to distinguish exolabial and endolabial.

ɹ	Subscript left hook	Palatalized	<i>Superseded by 498 0321 E227 421 (1989)</i>
◌̥	Subscript W	Labialized	<i>Superseded by 499 032B E22D 420 (1989)</i>

Figure 15 International Phonetic Association (1999: 173). An omega shape is retained in the IPA *Handbook*, and is identified with U+032B COMBINING INVERTED DOUBLE ARCH BELOW. The symbol “420” that it was superseded by is U+02B7 MODIFIER LETTER SMALL W.

3.2.1 *Nasalization*. Many Mexican languages, above all those in the Otomanguean family, distinguish between oral and nasalized vowels. In the case of Otomi, as registered by the Franciscan friars Pedro de Cárceres (fl. 1580) and Alonso Urbano, nasalized vowels were distinguished by writing a small omega-shaped diacritic above them, <◌̥>, which, following a suggestion by Heriberto Avelino (personal communication), might be called a *little bat*, or ‘murcielaguito’ in Spanish.

Figure 16. Smith-Stark (2005: 19). This “omega-shaped diacritic” is presumably to be encoded as U+1AC7 <◌̥>.

The first, [w]-type, occurs with velar stops, and uvular stops and fricatives, as in /a'g^wə/ ‘heart’ [a'ḡ^wu] /a'k^wa/ ‘rain’ [a'ḳ^wa], /'a^wq^wa/ ‘Sukhumi’ (capital of Abkhazia) [a'q̣^wΛ] /a'χ^w/ ‘price’ [a'χ̣^w] /a'ḳ^wə/ ‘board’ [a'ḡ^wu]. This type also occurs with the Bzyb dialect: labialised pharyngalised uvular fricative [χ^w], as in /a'χ̣^wəts/ ‘hair’ [a'χ̣^wəts] (Bzyb, incidentally, has voiceless uvular, pharyngalised uvular, and pharyngal fricatives, each in a plain vs. labialised pair: /χ, χ^w; χ̣, χ̣^w; h, h^w/).

Figure 17. Catford (1972: 679). <◌̥> on letters with descenders in [ḡ], [q̣] and [χ̣].

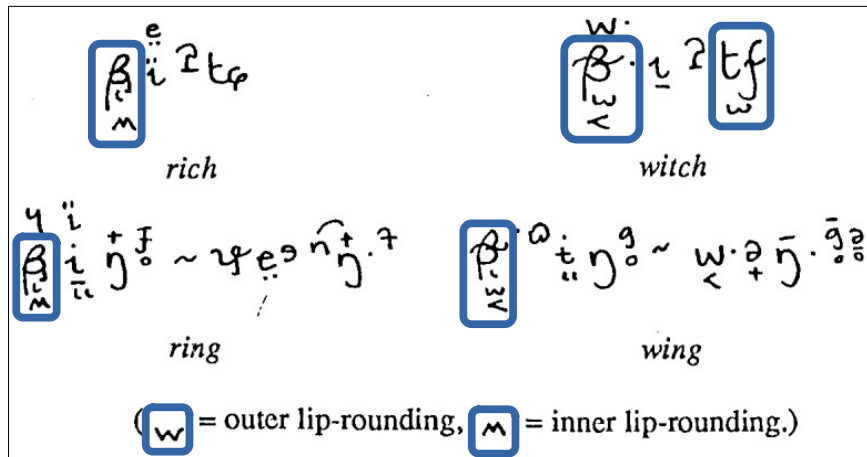


Figure 18. Kelly & Local (1989: 154). The print forms of the labialization diacritics, U+1ABF ⟨◌̥⟩ and U+1AC0 ⟨◌̦⟩, for “outer” and “inner” lip-rounding (exolabial and endolabial, respectively). Angular ⟨◌̥⟩ is a distinct character from the U+032B ⟨◌̥⟩ of official IPA, though in handwriting both approach a double arch ⟨◌̥⟩.

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.

A. Administrative

1. **Title:** IPA diacritics above and one below

2. Requester's name: Kirk Miller

3. Requester type (Member body/Liaison/Individual contribution): individual

4. Submission date: 2024 March 31

5. Requester's reference (if applicable): _____

6. Choose one of the following:
 This is a complete proposal: yes
 (or) More information will be provided later: _____

B. Technical – General

1. Choose one of the following:
 a. This proposal is for a new script (set of characters): _____
 Proposed name of script: _____
 b. The proposal is for addition of character(s) to an existing block: yes
 Name of the existing block: Combining Diacritical Marks Extended

2. Number of characters in proposal: 12

3. Proposed category (select one from below - see section 2.2 of P&P document):
 A-Contemporary B.1-Specialized (small collection) _____ B.2-Specialized (large collection) _____
 C-Major extinct _____ D-Attested extinct _____ E-Minor extinct _____
 F-Archaic Hieroglyphic or Ideographic _____ G-Obscure or questionable usage symbols _____

4. Is a repertoire including character names provided? yes
 a. If YES, are the names in accordance with the “character naming guidelines”
 in Annex L of P&P document? yes
 b. Are the character shapes attached in a legible form suitable for review? yes

5. Fonts related:
 a. Who will provide the appropriate computerized font to the Project Editor of 10646 for publishing the standard?
 Kirk Miller
 b. Identify the party granting a license for use of the font by the editors (include address, e-mail, ftp-site, etc.):
 SIL (Gentium Release)

6. References:
 a. Are references (to other character sets, dictionaries, descriptive texts etc.) provided? yes
 b. Are published examples of use (such as samples from newspapers, magazines, or other sources)
 of proposed characters attached? yes

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)? yes

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? If YES explain	 no
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.)? If YES, with whom? If YES, available relevant documents:	 yes <i>International Phonetic Association, International Clinical Phonetics and Linguistics Association (see letter of support)</i>
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) Reference:	<i>phonetic</i>
5. Are the proposed characters in current use by the user community? If YES, where? Reference:	 yes <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? If YES, is a rationale provided? If YES, reference:	 no
7. Should the proposed characters be kept together in a contiguous range (rather than being scattered)?	<i>if possible</i>
8. Can any of the proposed characters be considered a presentation form of an existing character or character sequence? If YES, is a rationale for its inclusion provided? If YES, reference:	 yes yes <i>Unicode encodes existing positional pairs of diacritics separately</i>
9. Can any of the proposed characters be encoded using a composed character sequence of either existing characters or other proposed characters? If YES, is a rationale for its inclusion provided? If YES, reference:	 yes yes <i>Unicode encodes existing tone ligatures</i>
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? If YES, is a rationale for its inclusion provided? If YES, reference:	 yes yes <i>(see discussion)</i>
11. Does the proposal include use of combining characters and/or use of composite sequences? If YES, is a rationale for such use provided? If YES, reference:	 yes yes <i>(see discussion)</i>
Is a list of composite sequences and their corresponding glyph images (graphic symbols) provided? If YES, reference:	 no
12. Does the proposal contain characters with any special properties such as control function or similar semantics? If YES, describe in detail (include attachment if necessary)	 no
13. Does the proposal contain any Ideographic compatibility characters? If YES, are the equivalent corresponding unified ideographic characters identified? If YES, reference:	 no