

مجلة جامعة الملك عبد العزيز: العلوم الهندسية، م ١٦، ع ٢، ص: ٢٧-٦٤ (٢٠٠٦م/١٤٢٧هـ)

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International

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.Phonetic Alphabet

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International Phonetic Alphabet

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long vowels

consonants

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consonants

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pulmonic

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.non-pulmonic consonants

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velo-

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diacritics

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suprasegmentals

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fricative

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palate

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consonant

tones and accents

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vocal folds

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**THE INTERNATIONAL PHONETIC ALPHABET (revised to 1993)**  
**CONSONANTS (PULMONIC)**

|                     | Bilabial | Labiodental | Dental | Alveolar | Postalveolar | Retroflex | Palatal | Velar | Uvular | Pharyngeal | Glottal |
|---------------------|----------|-------------|--------|----------|--------------|-----------|---------|-------|--------|------------|---------|
| Plosive             | p b      |             |        | t d      |              | ʈ ɖ       | c ɟ     | k ɡ   | q ɢ    |            | ʔ       |
| Nasal               | m        | ɱ           |        | n        |              | ɳ         | ɲ       | ŋ     | ɴ      |            |         |
| Trill               | ʙ        |             |        | ʀ        |              |           |         |       | ʀ      |            |         |
| Tap or Flap         |          |             |        | ɾ        |              | ɽ         |         |       |        |            |         |
| Fricative           | ɸ β      | f v         | θ ð    | s z      | ʃ ʒ          | ʂ ʐ       | ç ʝ     | x ɣ   | χ ʁ    | ħ ʕ        | h ɦ     |
| Lateral fricative   |          |             |        | ɬ ɮ      |              |           |         |       |        |            |         |
| Approximant         |          | ʋ           |        | ɹ        |              | ɻ         | j       | ɰ     |        |            |         |
| Lateral approximant |          |             |        | l        |              | ɭ         | ʎ       | ʟ     |        |            |         |

Where symbols appear in pairs, the one to the right represents a voiced consonant. Shaded areas denote articulations judged impossible.

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**CONSONANTS (NON-PULMONIC)**

| Clicks | Voiced implosives | Ejectives             |
|--------|-------------------|-----------------------|
| ◌͡     | ɓ                 | ʼ as in:              |
| ◌͜     | ɗ                 | ɓʼ Bilabial           |
| ◌͝     | ɟ                 | ɗʼ Dental/alveolar    |
| ◌͞     | ɠ                 | ɟʼ Palatal            |
| ◌͟     | ɡ                 | ɠʼ Velar              |
| ◌͠     | ʙ                 | ɡʼ Uvular             |
|        |                   | ɬʼ Alveolar fricative |

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| DIACRITICS                     |   |                                      | Diacritics may be placed above a symbol with a descender, e.g. $\underset{\cdot}{\eta}$ |                                   |   |
|--------------------------------|---|--------------------------------------|---|-----------------------------------|---|
| ◦ Voiceless                    | $\underset{\cdot}{n}$ $\underset{\cdot}{d}$ | ◌.. Breathy voiced                   | $\underset{\cdot}{b}$ $\underset{\cdot}{a}$   | ◌ <sub>̣</sub> Dental             | $\underset{\cdot}{t}$ $\underset{\cdot}{d}$ |
| ∨ Voiced                       | $\underset{\cdot}{s}$ $\underset{\cdot}{t}$ | ◌~ Creaky voiced                     | $\underset{\cdot}{b}$ $\underset{\cdot}{a}$   | ◌ <sub>̤</sub> Apical             | $\underset{\cdot}{t}$ $\underset{\cdot}{d}$ |
| h Aspirated                    | $t^h$ $d^h$                                 | ◌~ Linguolabial                      | $\underset{\cdot}{t}$ $\underset{\cdot}{d}$   | ◌ <sub>̦</sub> Laminal            | $\underset{\cdot}{t}$ $\underset{\cdot}{d}$ |
| ◌ More rounded                 | $\underset{\cdot}{\varnothing}$             | ◌ <sup>w</sup> Labialized            | $t^w$ $d^w$   | ◌~ Nasalized                      | $\tilde{e}$                                 |
| ◌ Less rounded                 | $\underset{\cdot}{\varnothing}$             | ◌ <sup>j</sup> Palatalized           | $t^j$ $d^j$   | ◌ <sup>n</sup> Nasal release      | $d^n$                                       |
| ◌+ Advanced                    | $\underset{\cdot}{u}$                       | ◌ <sup>Y</sup> Velarized             | $t^Y$ $d^Y$   | ◌ <sup>l</sup> Lateral release    | $d^l$                                       |
| ◌- Retracted                   | $\underset{\cdot}{i}$                       | ◌ <sup>ʕ</sup> Pharyngealized        | $t^{ʕ}$ $d^{ʕ}$   | ◌ <sup>ʔ</sup> No audible release | $d^{ʔ}$                                     |
| ◌.. Centralized                | $\ddot{e}$                                  | ◌~ Velarized or pharyngealized       | $\ddot{t}$  |                                   |   |
| ◌ <sup>x</sup> Mid-centralized | $\ddot{e}$                                  | ◌ <sub>̥</sub> Raised                | $e̥$ ( $\underset{\cdot}{J}$ = voiced alveolar fricative)                               |                                   |   |
| ◌ <sub>̣</sub> Syllabic        | $\underset{\cdot}{J}$                       | ◌ <sub>̤</sub> Lowered               | $e̤$ ( $\underset{\cdot}{\beta}$ = voiced bilabial approximant)                         |                                   |   |
| ◌ Non-syllabic                 | $e̥$  | ◌ <sub>̣</sub> Advanced Tongue Root  | $ẹ$  |                                   |   |
| ◌ Rhoticity                    | $\text{ə}^{\text{r}}$                       | ◌ <sub>̣</sub> Retracted Tongue Root | $ẹ$  |                                   |   |

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| SUPRASEGMENTALS |                              |
|-----------------|------------------------------|
| ◌ <sup>ˈ</sup>  | Primary stress               |
| ◌ <sup>ˌ</sup>  | Secondary stress             |
| ◌ <sup>ː</sup>  | Long                         |
| ◌ <sup>ˑ</sup>  | Half-long                    |
| ◌ <sup>̥</sup>  | Extra-short                  |
| ◌               | Syllable break               |
| ◌               | Minor (foot) group           |
| ◌               | Major (intonation) group     |
| ◌               | Linking (absence of a break) |

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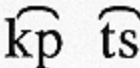
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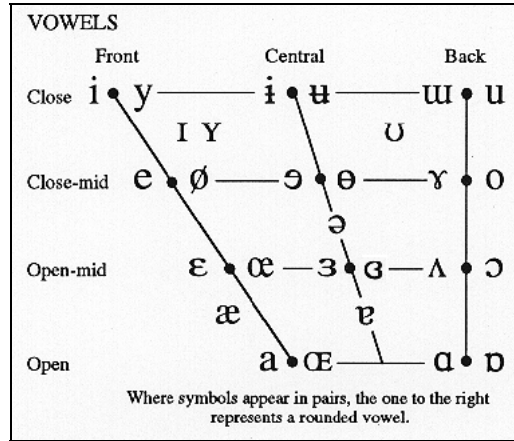
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| OTHER SYMBOLS |                                   |   |                            |
|---------------|-----------------------------------|---|----------------------------|
| ʌ             | Voiceless labial-velar fricative  | ʑ ʒ   | Alveolo-palatal fricatives |
| ʋ             | Voiced labial-velar approximant   | ɺ   | Alveolar lateral flap      |
| ɥ             | Voiced labial-palatal approximant | ɧ   | Simultaneous ʃ and X       |
| ħ             | Voiceless epiglottal fricative    | Affricates and double articulations can be represented by two symbols joined by a tie bar if necessary. |                            |
| ʕ             | Voiced epiglottal fricative       |                       |                            |
| ʕ̰            | Epiglottal plosive                |   |                            |

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| TONES & WORD ACCENTS |          |            |        |                     |
|----------------------|----------|------------|--------|---------------------|
| LEVEL                |          | CONTOUR    |        |                     |
| ẽ                    | or ǀ     | Extra high | ẽ or ǁ | Rising              |
| é                    | ǁ        | High       | ê      | Falling             |
| ē                    | ǂ        | Mid        | ẽ      | High rising         |
| è                    | ǃ        | Low        | ẽ      | Low rising          |
| ẽ                    | Ǆ        | Extra low  | ẽ      | Rising-falling etc. |
| ↓                    | Downstep |            | ↗      | Global rise         |
| ↑                    | Upstep   |            | ↘      | Global fall         |

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|----------------------------------|--------------------------|------|
| h                                | هـ                       | هـ   |
| w                                | و                        | و    |
| j                                | ي                        | ي    |
| ʎ                                | ع                        | ع    |
| ɸ                                | ع                        | ع    |
| n                                | ن                        | ن    |
| l                                | ل                        | ل    |

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| الرمز | الوصف                         |
|-------|-------------------------------|
| و     | رخو ومجهور وشفقائي وطبقي      |
| و     | تقاربي ومجهور و شفقائي وطبقي  |
| و     | تقاربي ومجهور و شفقائي و غاري |
| ح     | رخو ومهموس ولسان مزماري       |
| ع     | رخو ومجهور ولسان مزماري       |
| ح     | شديد ولسان مزماري             |
| ز     | رخو وثنوي غاري                |
| ز     | منقور وجائبي وثنوي            |
| ث     | نطق /ث/ ، /خ/ في الوقت ذاته   |

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∨ : rounded vowels  
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central vowels

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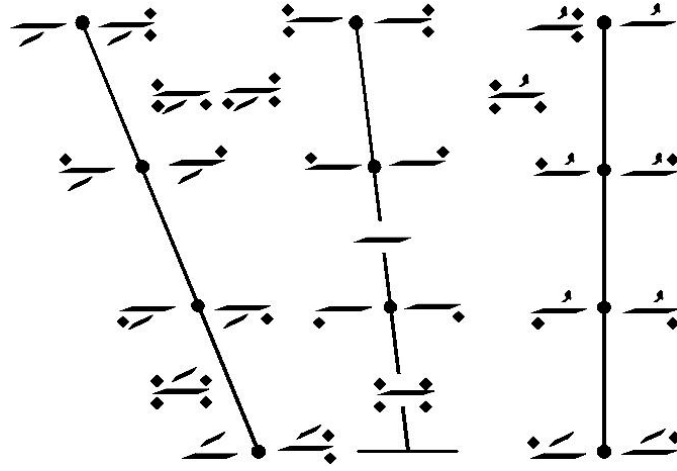






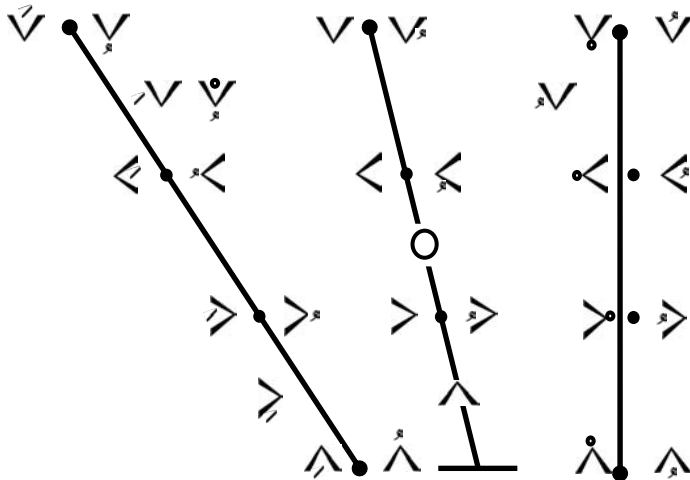
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(Kacstaipa)

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|   |   |   |   |   |   |                       |
|---|---|---|---|---|---|-----------------------|
| ع | ص | ر | د | ح | ب | Kacstaipa             |
|   |   |   |   |   |   | Arabic<br>Transparent |

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|  |  |   | IPA | Unicode | Description                    |
|--|--|---|-----|---------|--------------------------------|
|  |  | ب | b   | 0062    | bilabial voiced stop           |
|  |  | ت | t   | 0074    | alveolar voiceless stop        |
|  |  | ث | θ   | 0275    | dental voiceless fricative     |
|  |  | ج | ʒ   | 0292    | post alveolar voiced fricative |
|  |  | ح | h   | 0127    | pharyngeal voiceless fricative |

|  |  |   | IPA            | Unicode   | Description                                |
|--|--|---|----------------|-----------|--|
|  |  | خ | χ              | 03C7      | uvular voiceless fricative                 |
|  |  | د | d              | 0064      | alveolar voiceless stop                    |
|  |  | ذ | ð              | 00F0      | dental voiced fricative                    |
|  |  | ر | r              | 0072      | alveolar voiced trill                      |
|  |  | ز | z              | 00A       | alveolar voiced fricative                  |
|  |  | س | s              | 0073      | alveolar voiceless fricative               |
|  |  | ش | ʃ              | 0283      | alveopalatal voiceless fricative           |
|  |  | ص | s <sup>ʕ</sup> | 0073+02C1 | alveolar voiceless emphatic fricative      |
|  |  | ض | ʒ <sup>ʕ</sup> | 026E+02C1 | alveolar voiced lateral emphatic fricative |
|  |  | ط | t <sup>ʕ</sup> | 0074+02C1 | alveolar voiceless emphatic stop           |
|  |  | ظ | ð <sup>ʕ</sup> | 00F0+02C1 | dental voiced emphatic fricative           |
|  |  | ع | ʕ              | 0295      | pharyngeal voiced fricative                |

|  |   |   | IPA | Unicode | Description                      |
|--|---|---|-----|---------|----------------------------------|
|  |   | غ | ɣ   | 0281    | uvular voiced fricative          |
|  |   | ف | f   | 0066    | labiodentals voiceless fricative |
|  |   | ق | q   | 0071    | uvular voiceless stop            |
|  |   | ك | k   | 006B    | velar voiceless stop             |
|  |   | ل | l   | 006L    | alveolar voiced lateral          |
|  |   | م | m   | 006D    | bilabial nasal                   |
|  |   | ن | n   | 006E    | alveolar nasal                   |
|  |   | ه | h   | 0068    | glottal voiceless fricative      |
|  |   | و | w   | 0077    | labial-velar voiced approximant  |
|  |   | ي | j   | 006A    | palatal voiced approximant       |
|  |   | ء | ʔ   | 0294    | glottal stop                     |
|  |   | پ | p   | 0070    | bilabial voiceless stop          |
|  | ٲ | ٲ | t   | 0288    | voiceless retroflex stop         |
|  |   | ٲ | ɖ   | 0256    | voiced retroflex stop            |
|  |   | ٲ | c   | 0063    | palatal voiceless stop           |
|  |   | ٲ | ɟ   | 025F    | palatal voiced stop              |
|  |   | و | g   | 0261    | velar voiced stop                |
|  |   | ق | ɢ   | 0262    | uvular voiced stop               |
|  |   | م | ɱ   | 0271    | labiodentals nasal               |
|  |   | ن | ɳ   | 0273    | retroflex nasal                  |
|  |   | ن | ɲ   | 0272    | palatal nasal                    |
|  |   | ن | ŋ   | 014B    | velar nasal                      |
|  |   | ن | ɴ   | 027B    | uvular nasal                     |

|  |   |     | IPA | Unicode | Description                          |
|--|---|-----|-----|---------|--------------------------------------|
|  |   | ب̤  | B   | 0042    | bilabial trill                       |
|  |   | ع̤  | R   | 0052    | uvular trill                         |
|  |   | ر̤  | r   | 027E    | alveolar tap                         |
|  |   | ر̤̣ | ɽ   | 027D    | retroflex tap                        |
|  |   | پ̤  | ɸ   | 0278    | bilabial voiceless fricative         |
|  |   | ب̤  | β   | 03B2    | bilabial voiced fricative            |
|  |   | فا  | v   | 0056    | labiodentals voiced fricative        |
|  | = | دج  | dʒ  | 02A4    | alveopalatal voiced affricate        |
|  |   | س̤  | ʂ   | 0282    | retroflex voiceless fricative        |
|  |   | ز̤  | ʐ   | 0290    | retroflex voiced fricative           |
|  |   | ش̤  | ç   | 00E7    | palatal voiceless fricative          |
|  |   | ج̤  | ɟ   | 029D    | palatal voiced fricative             |
|  |   | غ̤  | ɣ   | 0263    | velar voiced fricative               |
|  |   | خ̤  | x   | 0078    | velar voiceless fricative            |
|  |   | ه̤  | ɦ   | 0266    | glottal voiced fricative             |
|  |   | ض̤  | ɬ   | 026C    | alveolar voiceless lateral fricative |
|  |   | ض̤̣ | ɮ   | 026E    | alveolar voiced lateral fricative    |
|  |   | و̤  | ʋ   | 028B    | labiodental voiced approximant       |
|  |   | ی̤  | ɹ   | 0279    | alveolar voiced approximant          |
|  |   | ی̤̣ | ɻ   | 027B    | retroflex voiced approximant         |
|  |   | ی̤̣ | ɻ   | 0270    | velar voiced approximant             |

|  |  |   | IPA | Unicode | Description                          |
|--|--|---|-----|---------|--------------------------------------|
|  |  | ڄ | ɭ   | 026B    | retroflex voiced lateral approximant |
|  |  | ڇ | ʎ   | 028E    | palatal voiced lateral approximant   |
|  |  | ڙ | ɮ   | 029F    | velar voiced lateral approximant     |

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|   |  |    | IPA | Unicode | Description                                      |
|---|--|----|-----|---------|--|
|   |  | ڙ  | ɔ̜  | 0298    | bilabial click                                   |
|   |  |    |     | 007C    | dental click                                     |
|   |  | !  | !   | 0021    | alveolar click                                   |
|   |  | #  | ɥ   | 0023    | palatal click                                    |
|   |  |    |     | 0146    | alveolar lateral click                           |
| : |  | ،  |     |         | Implosive  |
|   |  | ب' | ɓ   | 0253    | bilabial implosive                               |
|   |  | د' | ɗ   | 0257    | alveolar implosive                               |
|   |  | ڍ' | f   | 0284    | palatal implosive                                |
|   |  | ڳ' | ɠ   | 0260    | velar implosive                                  |
|   |  | ڱ' | ɠ   | 029B    | uvular implosive                                 |
| : |  | '  | '   | 00B3    | ejectives, such as in:<br>bilabial stop ejective |
|   |  | پ' | p'  |         |  |

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|  |   | عربي           | IPA | Unicode | Description               |
|--|---|----------------|-----|---------|---------------------------|
|  |   | ∨              | i   | 0069    | close front               |
|  |   | ∨ <sub>و</sub> | y   | 0079    | rounded close front       |
|  |   | ∠              | e   | 0065    | close-mid front           |
|  | = | ∠ <sub>و</sub> | ø   | 00F8    | rounded close-mid front   |
|  |   | ∠ <sub>و</sub> | ɛ   | 025B    | open-mid front            |
|  | - | ∠ <sub>و</sub> | œ   | 0153    | rounded open-mid front    |
|  |   | ∠ <sub>و</sub> | æ   | 00E6    | semi-open front           |
|  |   | ∧              | a   | 0061    | open front                |
|  | \ | ∧ <sub>و</sub> | æ   | 0276    | rounded open front        |
|  |   | ∨              | ɪ   | 026A    | semi-close front          |
|  |   | ∨ <sub>و</sub> | ɣ   | 028F    | rounded semi-close front  |
|  |   | ∨              | ɨ   | 0268    | close central             |
|  |   | ∨ <sub>و</sub> | ɥ   | 0289    | rounded close central     |
|  | - | ∠              | ə   | 0258    | close-mid central         |
|  |   | ∠ <sub>و</sub> | ɵ   | 0275    | rounded close-mid central |
|  |   | ○              | ə   | 0259    | mid central               |
|  | = | ∠              | ɜ   | 025C    | open-mid central          |
|  |   | ∠ <sub>و</sub> | ɞ   | 025E    | rounded open-mid central  |





|     |  |   | IPA | Unicode | Description                   |
|-----|--|---|-----|---------|-------------------------------|
|     |  |   | ˘   | 00C2    | mid-centralized               |
|     |  |   | ̩   | 00D1    | syllabic                      |
|     |  |   | ̯   | 00D2    | non-syllabic                  |
|     |  | ˜ | ˜   | 00C5    | rhoticity                     |
|     |  | ̤ | ̤   | 00B7    | breathy voiced                |
|     |  | ̥ | ̥   | 00B8    | creaky voiced                 |
|     |  | ̦ | ̦   | 00B9    | linguolabial                  |
| " " |  |   | w   | 00C6    | labialized                    |
|     |  |   | j   |         | palatalized                   |
|     |  |   | ɣ   |         | velarized                     |
|     |  |   | ʁ   |         | pharyngealized                |
| /   |  | ˜ | ˜   |         | velarized /<br>pharyngealized |
|     |  | ̠ | ̠   |         | raised                        |
|     |  | ̡ | ̡   |         | lowered                       |
|     |  | ̢ | ̢   |         | advanced tongue root          |
|     |  | ̣ | ̣   |         | retracted tongue root         |
|     |  | ̤ | ̤   |         | dental                        |
|     |  | ̥ | ̥   |         | apical                        |
|     |  | ̦ | ̦   |         | laminal                       |
|     |  | ̧ | ̧   |         | nasalized                     |
|     |  | ̨ | n   |         | nasal release                 |
|     |  | ̩ | l   |         | lateral release               |
|     |  | ̪ | ̪   |         | no audible release            |

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|  |  |    | IPA | Unicode | Description                  |
|--|--|----|-----|---------|------------------------------|
|  |  | ˈ  | ˈ   |         | primary stress               |
|  |  | ˌ  | ˌ   |         | secondary stress             |
|  |  | ː  | ː   |         | long                         |
|  |  | ˑ  | ˑ   |         | half-long                    |
|  |  | ◌̥ | ◌̥  |         | extra short                  |
|  |  | ◌̩ | ◌̩  |         | syllable break               |
|  |  | ◌̪ | ◌̪  |         | minor (foot) group           |
|  |  | ◌̫ | ◌̫  |         | major (intonation) group     |
|  |  | ◌̬ | ◌̬  |         | linking (absence of a break) |

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|  |  |    | IPA | Unicode | Description                       |
|--|--|----|-----|---------|-----------------------------------|
|  |  | ɸ  | ɸ   |         | voiceless labial-velar fricative  |
|  |  | ɹ  | w   |         | voiced labial-velar approximant   |
|  |  | ɹ̥ | ɸ   |         | voiced labial-palatal approximant |
|  |  | ħ  | ħ   |         | voiceless epiglottal fricative    |
|  |  | ʕ  | ʕ   |         | voiced epiglottal fricative       |

|   |   |    | IPA | Unicode | Description   |
|---|---|----|-----|---------|---|
|   |   | ع  | ʔ   |         | epiglottal plosive  |
|   |   | س  | ç   |         | voiceless alveolo-palatal fricative                         |
|   |   | س  | ʒ   |         | voiced alveolo-palatal fricative                            |
|   |   | ل  | ɺ   |         | alveolar lateral flap                                       |
| + | / | شخ | fʃ  |         | simultaneous f and x  |
|   |   |    | —   |         | to represent double articulations such as the affricate: tʃ |

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|  |  |   | IPA | Unicode | Description |
|--|--|---|-----|---------|-------------|
|  |  | ⤴ | ⤴   |         | extra high  |
|  |  | ⤵ | ⤵   |         | high        |
|  |  | ⤶ | ⤶   |         | mid         |
|  |  | ⤷ | ⤷   |         | low         |
|  |  | ⤸ | ⤸   |         | extra low   |
|  |  | ↓ | ↓   |         | downstep    |
|  |  | ↑ | ↑   |         | upstep      |
|  |  | ↗ | ↗   |         | rising      |
|  |  | ↘ | ↘   |         | falling     |
|  |  | ↗ | ↗   |         | high rising |

|  |  |    | IPA | Unicode | Description    |
|--|--|----|-----|---------|----------------|
|  |  | ˨  | ˨   |         | low rising     |
|  |  | ˨˨ | ˨˨  |         | rising-falling |
|  |  | ↗  | ↗   |         | global rise    |
|  |  | ↘  | ↘   |         | global fall    |

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|  |   |   | IPA | Unicode | Description  |
|--|---|---|-----|---------|--|
|  |   | [ | [   |         | used for phonetic transcription or in phonological rules to indicate series of options |
|  |   | ] | ]   |         |  |
|  | \ | / | /   | 002F    | used in phonological transcription or to devide a phonological rule                    |
|  |   | { | {   | 007C    | used in phonological rules to select one of series of options                          |
|  |   | } | }   | 007D    |  |
|  |   | " | "   | 0022    | used to indicate the symbles between them are used in the writing system               |
|  |   | ( | (   | 0028    | used in phonological   |

|     |   |    | IPA | Unicode | Description                               |
|-----|---|----|-----|---------|---|
|     |   | )  | )   | 0029    | rules to indicate the context is optional |
|     |   | #  | #   | 0023    | beginning or end of word                  |
|     |   | ⇐  | ⇒   | 222     | become (in the phonological rules)        |
|     |   | ←  | →   | 174     |   |
|     |   |    |     |         | Light                                     |
| ( ) |   |    |     |         | released with audible sound               |
|     |   |    |     |         | Emphaticness                              |
|     |   |    |     |         | uvularization                             |
| =   |   |    |     |         | duration=2 sounds                         |
|     |   |    |     |         | duration                                  |
|     |   |    |     |         | duration                                  |
|     |   |    |     |         | duration                                  |
|     | - | دز |     |         | alveolar voiced affricate                 |
|     | = | چ  |     |         | Alveolar voiceless affricate              |
|     | - | دز |     |         | Alveopalatal voiceless affricate          |

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<http://ceri.kacst.edu.sa>

[.http://www.mghamdi.com/AIPA.zip](http://www.mghamdi.com/AIPA.zip)





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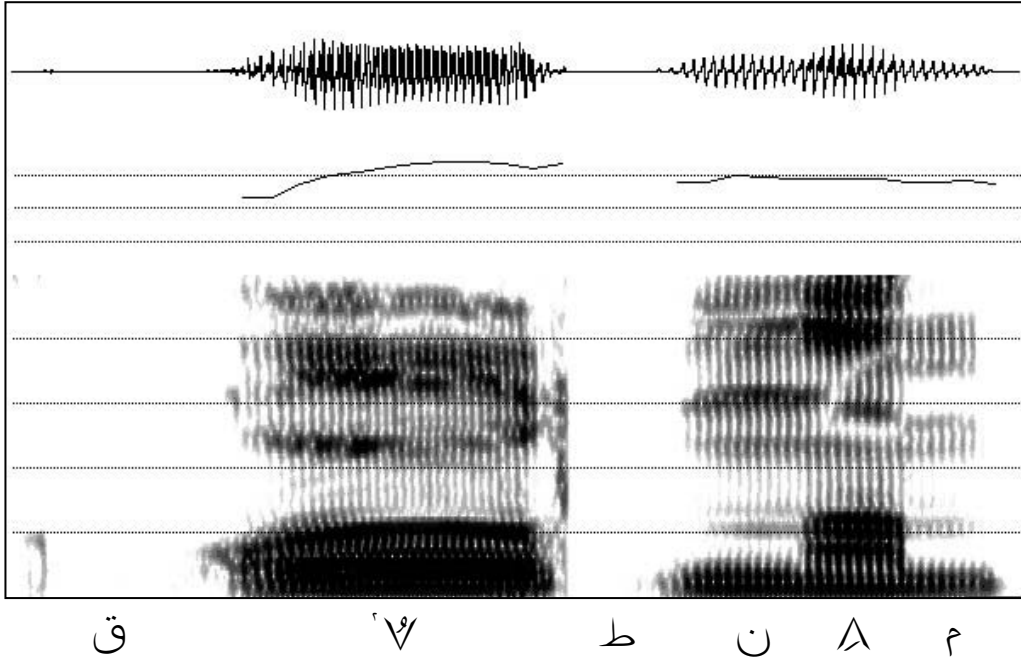
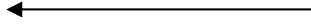
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## Arabic International Phonetic Alphabet

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**Abstract.** Since the invention of the International Phonetic Alphabet (IPA) in 1886, it remains the only alphabet that can represent all the sounds of world languages. However, the IPA symbols are based on the Roman letters. This means that speakers of languages which possess different orthography are not able to use them. For example, Arab linguists and researchers find it almost impossible to use IPA when they write in Arabic script; Arabic orthography differs in shape and direction of writing. In addition, IPA does not have symbols for the emphatic sounds: / ʔ /, / ʕ /, / ʁ /, / ʁ /, / ʁ /, / ʁ /. To make it possible for Arab linguists and researcher who work on language sounds, a new alphabet has been designed. This paper is to present Arabic International Phonetic Alphabet (AIPA). AIPA consists of symbols that are based on Arabic orthographic system. It covers all the symbols in IPA in addition to some Arabic sounds which do not have representations in IPA. AIPA has been designed and now is available as Fonts. The AIPA fonts can be used in typing and entering linguistic data to computers. AIPA symbols differ from Arabic orthography in terms of independency; each symbol is not connected to the adjacent symbols. So, an Arabic word such as "صوت" is written as: / صوت ٧ي ٨هـ / .

Keywords: Arabic, phonetic, symbol, alphabet.