

TIPA: A System for Processing Phonetic Symbols in L^AT_EX

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Introduction

TIPA¹ is a system for processing IPA (International Phonetic Alphabet) symbols in L^AT_EX. It is based on TSIPA² but both METAFONT source codes and L^AT_EX macros have been thoroughly rewritten so that it can be considered as a new system.

Among many features of TIPA, the following are the new features as compared with TSIPA or any other existing systems for processing IPA symbols.

- A new 256 character encoding for phonetic symbols ('T3'), which includes all the symbols and diacritics found in the recent versions of IPA and some non-IPA symbols.
- Complete support of L^AT_EX 2_ε.
- Roman, slanted, bold, bold extended and sans serif font styles.
- Easy input method in the IPA environment.
- Extended macros for accents and diacritics.³
- A flexible system of macros for 'tone letters'.
- An optional package (`vowel.sty`) for drawing vowel diagrams.⁴
- A slightly modified set of fonts that go well when used with Times Roman and Helvetica fonts.

¹ TIPA stands for *T_EX IPA* or *Tokyo IPA*. The primary ftp site in which the latest version of TIPA is placed is <ftp://tooyoo.1.u-tokyo.ac.jp/pub/TeX/tipa>, and also it is mirrored onto the directory `fonts/tipa` of the CTAN archives.

² TSIPA was made in 1992 by Kobayashi Hajime, Fukui Rei and Shirakawa Shun. It is available from a CTAN archive.

One problem with TSIPA was that symbols already included in OT1, T1 or Math fonts are excluded, because of the limitation of its 128 character encoding. As a result, a string of phonetic representation had to be often composed of symbols from different fonts, disabling the possibility of automatic inter-word kerning. And also too many symbols had to be realized as macros.

³ These macros are now defined in a separate file called '`exaccent.sty`' in order for the authors of other packages to be able to make use of them. The idea of separating these macros from other ones was suggested by Frank Mittelbach.

⁴ This package (`vowel.sty`) can be used independently from the TIPA package. Documentation is also made separately in '`vowel.tex`' so that no further mention will be made here.

TIPA Encoding

Selection of symbols The selection of TIPA phonetic symbols⁵ was made based on the following works.

- *Phonetic Symbol Guide* [9] (henceforth abbreviated as *PSG*).
- The official IPA charts of '49, '79, '89 and '93 versions.
- Recent articles published in the *JIPA*⁶, such as "Report on the 1989 Kiel Convention" [6], "Further report on the 1989 Kiel Convention" [7], "Computer Codes for Phonetic Symbols" [3], "Council actions on revisions of the IPA" [8], etc.
- An unpublished paper by J. C. Wells: "Computer-coding the IPA: a proposed extension of SAMPA" [10].
- Popular textbooks on phonetics.

More specifically, TIPA contains all the symbols, including diacritics, defined in the '79, '89 and '93 versions of IPA. And in the case of the '49 version of IPA, which is described in the *Principles* [5], there are too many obsolete symbols and only those symbols that had had some popularity at least for some time or for some group of people are included.

Besides IPA symbols, TIPA also contains symbols that are useful for the following areas of phonetics and linguistics.

- Symbols used in the American phonetics (e.g. æ, ɛ, ɒ, λ, etc.).
- Symbols used in the historical study of Indo-European languages (e.g. ɸ, ɹ, ʌ, ɹ, ɹ, and accents such as ă, ě, etc.).
- Symbols used in the phonetic description of languages in East Asia (e.g. ɿ, ʅ, ɕ, ɲ, ʈ, etc.).
- Diacritics used in 'extIPA Symbols for Disordered Speech' [4] and 'VoQS (Voice Quality Symbols)' [1] (e.g. ̞̠, ̡̞, ̢̞, etc.).

It should be also noted that TIPA includes all the necessary elements of 'tone letters', enabling

⁵ In the case of TSIPA, the selection of symbols was based on "Computer coding of the IPA: Supplementary Report" [2].

⁶ *Journal of the International Phonetic Association*.