How to Use the IEEEtran LATEX Class

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(Invited Paper)

***Abstract*—This article describes how to use the IEEEtran class with LATEX to produce high quality typeset papers that are suitable for submission to the Institute of Electrical and Electronics Engineers (IEEE). IEEEtran can produce conference, journal and technical note (correspondence) papers with a suitable choice of class options. This document was produced using IEEEtran in journal mode.**

***Index Terms*—Class, IEEEtran, LATEX, paper, style, template, typesetting.**

I. Introduction

WITH a recent IEEEtran class file, a computer running LATEX, and a basic understanding of the LATEX language, an author can produce professional quality typeset research papers very quickly, inexpensively, and with minimal effort. The purpose of this article is to serve as a user guide of IEEEtran LATEX class and to document its unique features and behavior.

This document applies to version 1.8b and later of IEEEtran. Prior versions do not have all of the features described here. IEEEtran will display the version number on the user's console when a document using it is being compiled. The latest version of IEEEtran and its support files can be obtained from IEEE's web site [1], or CTAN [2]. This latter site may have some additional material, such as beta test versions and files related to non-IEEE uses of IEEEtran. See the IEEEtran homepage [3] for frequently asked questions and recent news about IEEEtran.

Complimentary to this document are the files[1] `bare_conf.tex`, `bare_jrnl.tex`, `bare_jrnl_comsoc.tex`, `bare_conf_compsoc.tex`, `bare_jrnl_compsoc.tex` and `bare_jrnl_transmag.tex`, which are "bare bones" example (template) files of a conference, journal, IEEE Communications Society journal, IEEE Computer Society conference, IEEE Computer Society journal and IEEE TRANSACTIONS ON MAGNETICS paper, respectively. Authors can quickly obtain a functional document by using these files as starters for their own work. A more advanced example featuring the use of optional packages along with more complex usage techniques, can be found in `bare_adv.tex`.

It is assumed that the reader has at least a basic working knowledge of LATEX. Those so lacking are strongly encouraged to read some of the excellent literature on the subject [4]–[6]. In particular, Tobias Oetiker's *The Not So Short Introduction to LATEX 2ε* [5], which provides a general overview of working with LATEX, and Stefan M. Moser's *How to Typeset Equations in LATEX* [6], which focuses on the formatting of IEEE-style equations using IEEEtran's IEEEeqnarray commands, are both available for free online.

General support for LATEX related questions can be obtained in the internet newsgroup comp.text.tex. There is also a searchable list of frequently asked questions about LATEX [7].

Please note that the appendices sections contain information on installing the IEEEtran class file as well as tips on how to avoid commonly made mistakes.

II. Class Options

There are a number of class options that can be used to control the overall mode and behavior of IEEEtran. These are specified in the traditional LATEX way. For example,

```
\documentclass[9pt,technote]{IEEEtran}
```

is used with correspondence/brief/technote papers. The various categories of options will now be discussed. For each category, the default option is shown in bold. The user must specify an option from each category in which the default is not the one desired. The various categories are totally orthogonal to each other—changes in one will not affect the defaults in the others.

A. 9pt, **10pt**, 11pt, 12pt

There are four possible values for the normal text size. 10pt is used by the vast majority of papers. Notable exceptions are technote papers, which use 9pt text and the initial submissions to some conferences that use 11pt.

Be aware that IEEE Computer Society publications use "PostScript" (i.e., "big point", bp) point sizes (i.e., 72bp = 1in) rather than the traditional typesetters' point (i.e., 72.27pt = 1in). Also, "10pt" IEEE Computer Society journal papers actually use a slightly smaller, 9.5bp, font size (probably to compensate for the slightly wider nature of the Palatino font). IEEEtran will automatically tweak the selected font size as needed depending on the mode.

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[1]Note that it is the convention of this document not to hyphenate command or file names and to display them in `typewriter font`. Within such constructs, spaces are not implied at a line break and will be explicitly carried into the beginning of the next line. This behavior is not a feature of IEEEtran, but is used here to illustrate computer commands verbatim.