# The xepersian-hm package
# Fixing kashida in xepersian
# User Documentation

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HM :     *HM is an initialism for "Hossein Movahhedian" – the author's name and family.*

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# Contents

# 1 Introduction

[Kashida](#) is used in Persian and Arabic typography to justify the text regardless of the number of the words on the line by elongating characters at certain points instead of expanding spaces between words or individual letters.

Kashida feature in xepersian has problems with some fonts such as HM Series

The following files in the directory `texmf-dist/doc/xelatex/xepersian-hm/` can be used as simple examples of the usage of the package:

1. `xepersian-hm-glyph.tex`
   See pages 26 – 35 for PDF output.

2. `xepersian-hm-leaders-glyph.tex`
   See pages 36 – 45 for PDF output.

3. `xepersian-hm-leaders-hrule.tex`
   See pages 46 – 55 for PDF output.

Please use the Bitbucket issue tracker: [https://bitbucket.org/dma8hm1334/xepersian-hm/issues](https://bitbucket.org/dma8hm1334/xepersian-hm/issues) to report a bug, request a feature or if you have a comment.

I will do my best to fix all the bugs you report, but, unfortunately, time is a big hurdle to overcome; so, my apologies in advance for those which I cannot make time to fix.

# 2 Brief outline of the issues

Kashida is one of the most important features that must be included in any Persian typesetter. In xepersian this feature is implemented but with some problems. See pages 16 – 25 for pictorial illustrations for various font styles. These problems along with the fixes in xepersian-hm are briefly:

P-I In xepersian overlapping of glyphs occurs in letter combinations such as "ی+بِ", "ی+ةَ", and "ی+پِ" because the character U+FEF0 (ARABIC LETTER FARSI YEH FINAL FORM) is replaced with another character. This is fixed by modifying the fixed part of the glue inserted between the consecutive characters. Furthermore, both, the fixed and the stretchable parts of the glue can be changed by the user.

P-II In letter combinations such as "ه + ی", in xepersian, the character U+FEEB (ARABIC LETTER HEH INITIAL FORM) is replaced with U+06BE (ARABIC LETTER HEH DOACHASHEMEE). This is fixed by inserting the character U+200E before the combination "U+200D + hrule + U+200D" which is used as stretching item.

Note: Vafa Khalighi has fixed this problem in xepersian-23.0, by copying the corresponding code from xepersian-hm-0.5e. Consequently, the option `KashidaXBFix` along with the commands `\KashidaXBFixOn` and `\KashidaXBFixOff` has been removed in xepersian-23.0 and the later versions.

<table>
<tr><td>With KashidaOn:</td><td dir="rtl">الله، جل‌جلاله، اكبر</td></tr>
<tr><td>With KashidaOff:</td><td dir="rtl">اللّٰه، جل‌جلاله، اكبر</td></tr>
</table>

Figure 1: Package: xeprsian, Font: Noto Sans Arabic, Scale=1.1, Kashida=On

<table>
<tr><td>With KashidaOn:</td><td dir="rtl">الله، ﷲ و اكبر به‌ترتیب خروجی \جل‌جلاله، \الله و \اكبر</td></tr>
<tr><td>With KashidaOff:</td><td dir="rtl">الله، ﷲ و اكبر به‌ترتیب خروجی \جل‌جلاله، \الله و \اكبر</td></tr>
</table>

Figure 2: Package: xeprsian-hm, Font: Noto Sans Arabic, Scale=1.1, Kashida=glyph

P-III In xepersian when outline or shadow fonts are used, the gaps filled
by horizontal rule appears as a solid box. This is fixed by using the
kashida glyph instead of the horizontal rule in xepersian-hm.

P-IV Activating kashida in xepersian disturbs ligatures. This is fixed in
xepersian-hm by escaping the components of the ligature which form the
glyph, i.e. by inserting an escape character before Persian letters joined
to form the ligature without any empty characters, blank characters,
invisible characters and whitespace characters which form the glyph.
See Figures 1 and 2. Currently only 3 ligature glyphs are available in
xepersian-hm, but you can add as many as you want or let me know
the ligature glyphs that you need, so that I can add them in the next
release of the package. Of course, this is not the best solution, but it
works.

P-V If italic or oblique style of some fonts such as X Series 2 is used in
xepersian, an extra gap is left between the stretched characters. This
is fixed in HM Series fonts.

For comparing the outputs of xepersian and xepersian-hm with a variety of
options available to these packages, please see the Figures 3, 4, and 5.

## 3  Package loading and options

Please note that xepersian-hm loads xepersian automatically, so you may only
pass options to the package using the command \PassOptionsToPackage before
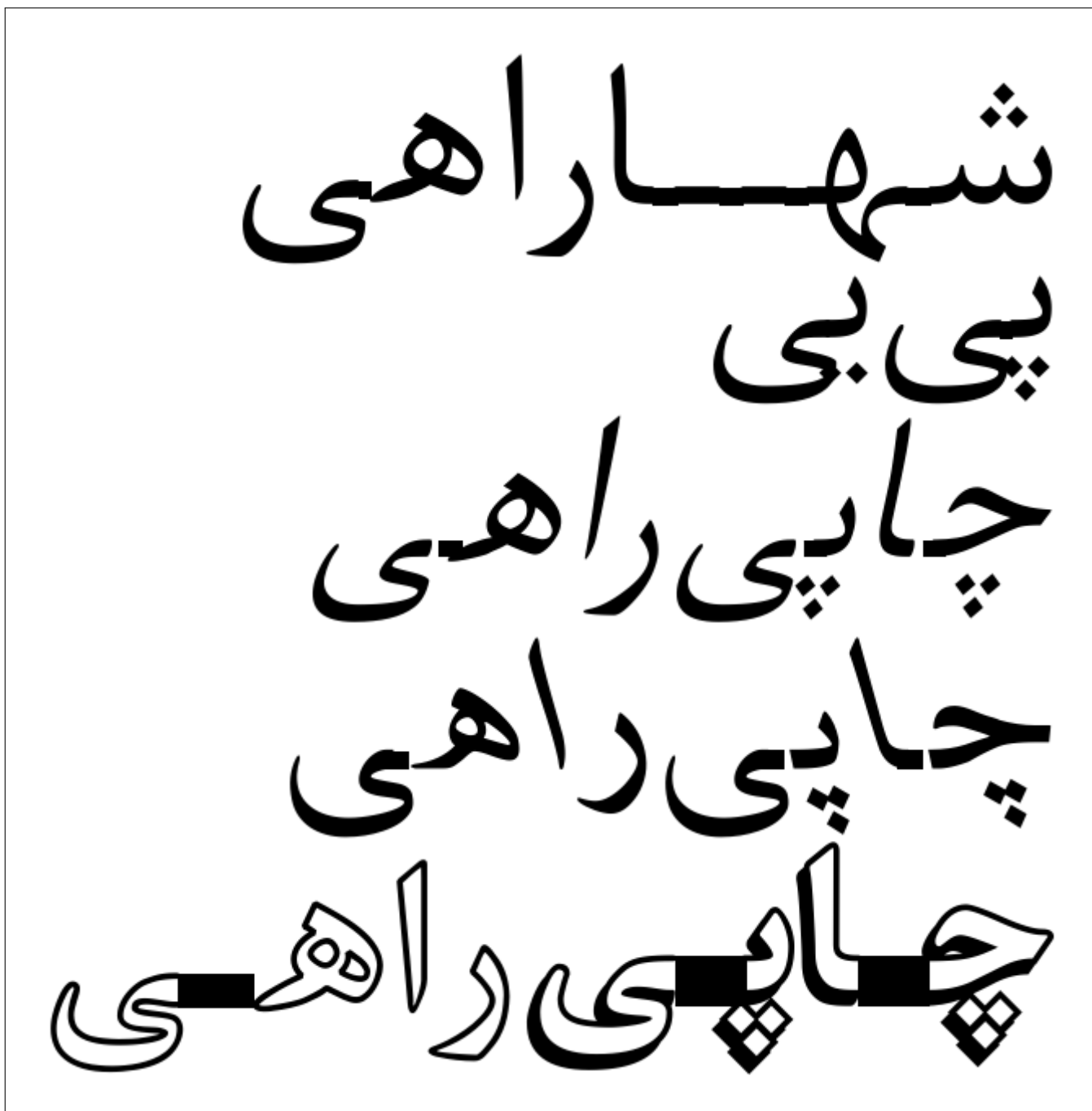\documentclass. For example:

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Figure 3: Package: xeprsian, Font: XB Kayhan, Scale=4.5, Kashida=On
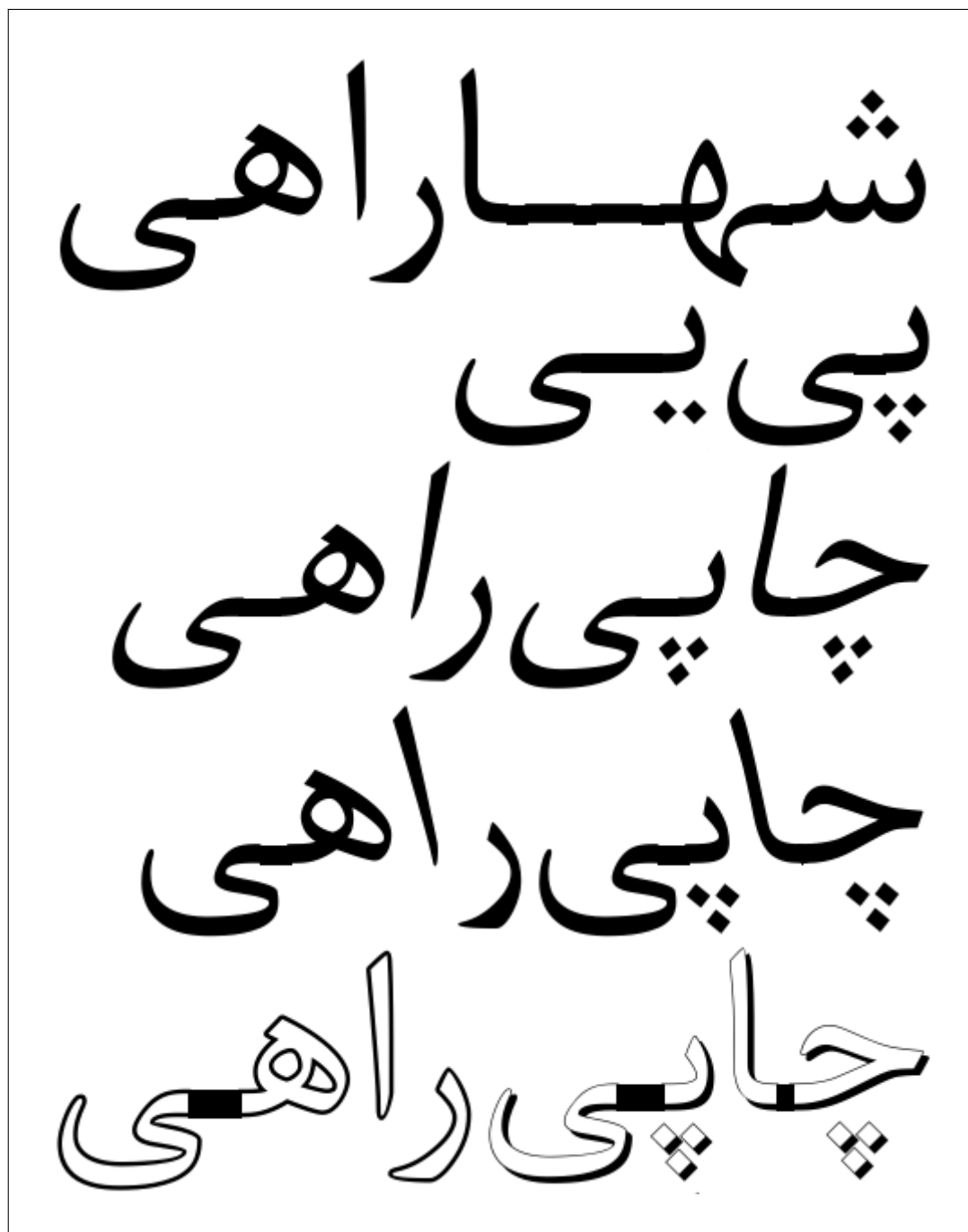
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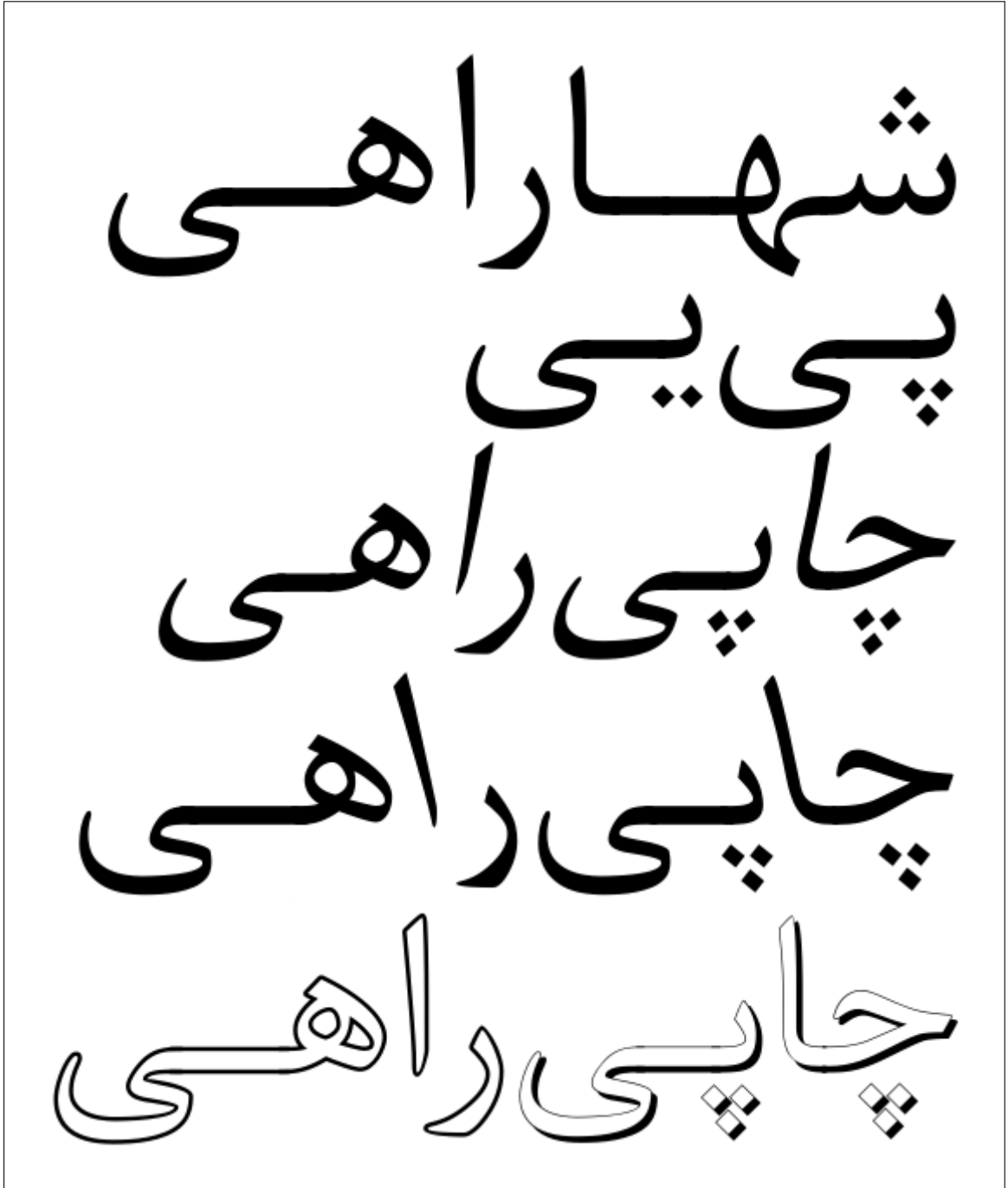Figure 4: Package: xeprsian-hm, Font: HM XKayhan, Scale=4.5, Kashida=hrule

Figure 5: Package: xeprsian-hm, Font: HM XKayhan, Scale=4.5, Kashida=glyph

```
\PassOptionsToPackage{debugfootnotedirection=off,localise=off}{xepersian}
\documentclass{report}
\usepackage{xcolor}
\usepackage[Kashida=leaders+glyph,kashidastretch=0.14 em plus 0.5 em]{xepersian-
hm}
```

The options available in xepersian-hm are:

- Kashida:
  which implements kashida feature with three possible values:

  – glyph:
    which uses the kashida character to stretch the text.

    With this option you should run xelatex thrice. For example:

    Imortant notes for X∃LATEX users:

    * If you are going to use this option then you should run xelatex
      thrice. For example:

      ```
      rm -f kashida-example.aux
      xelatex kashida-example.tex
      xelatex kashida-example.tex
      xelatex kashida-example.tex
      ```

    * This feature is still experimental in X∃LATEX and is not regarded
      as stable, so, if you are going to use this option be ready for un-
      predictable results.
    * With this option, for each gap which is to be filled with kashida,
      some commands, current position on the page, and references are
      saved in the \jobname.aux file and if the text is long, the file size
      may get too large.

  – leaders+glyph:
    which uses kashida glyph leaders to stretch the text. Please note that
    the option 'Kashida=leaders+glyph' is currently only supported by
    HM Series fonts available at https://dma8hm1334.bitbucket.io. If
    you know of any other font that supports this option, please let me
    know to add it to the list of corresponding fonts.
    Contrary to the option Kashida=glyph, in this case nothing is saved in
    .aux files.

  – leaders+hrule:
    which uses horizontal rule (\hrule) leaders to stretch the text.

  – Off:
    which disables kashida feature.

– On:

which is the same as `leaders+glyph`.

Also, please note that the value of `Kashida` is mandatory. For example `Kashida=glyph` inserts a stretched **kashida** glyph and `Kashida=leaders+glyph` inserts `kashida` leaders wherever it is needed.

- `linebreakpenalty`:
  which specifies the amount of penalty for preventing bad line-breaking. You may strictly specify the value of this option. For example you may either set `'linebreakpenalty=8'` or use the default values. The available default values of penalties which are put into the horizontal list output are the negative of the followings:

  | | |
  |---|---|
  | `min:` | 0 |
  | `low:` | 8 |
  | `medium:` | 15 |
  | `high:` | 25 |
  | `max:` | 10000 |

- `ligatures`:
  which fixes the disturbance of ligatures caused by activation of kashida in xepersian. You may strictly specify the value of this option. For example `'ligatures=dlig'` or you may use the default value. The available values are:

  | | |
  |---|---|
  | `aalt:` | Access All Alternatives |
  | `ccmp:` | Glyph Composition/Decomposition |
  | `dlig:` | Discretionary Ligatures |
  | `fina:` | Final (Terminal) Forms |
  | `init:` | Initial Forms |
  | `locl:` | Localized Forms |
  | `medi:` | Medial Forms |
  | `rlig:` | Required Ligatures |
  | `default:` | All the above features |

  Please note that this feature is still experimental and is not regarded as stable.

- `color`:
  which colorize the stretched parts of the text for checking the quality of kashida justification. Color must be one of a named color declared in xcolor package. For example: `color=blue` or `color=Blue`.

  Default color name is: `magenta`

  Please note that activating this option increases system resource and disk usage.

- kashidastretch:

  which specifies the amount of extra stretching for some combinations of characters. You may strictly specify the value of this option. For example 'kashidastretch=0.14 em plus 0.5 em' or you may use the default values. The available default values are:

```
kayhan          0.14 em plus 0.5 em
khorramshahr    0.131 em plus 0.5 em
kayhannavaar    0.129 em plus 0.5 em
kayhanpook      0.133 em plus 0.5 em
kayhansayeh     0.135 em plus 0.5 em
khoramshahr     0.128 em plus 0.5 em
khorramshahr    0.13 em plus 0.5 em
niloofar        0.132 em plus 0.5 em
paatch          0.127 em plus 0.5 em
riyaz           0.125 em plus 0.5 em
roya            0.142 em plus 0.5 em
shafigh         0.143 em plus 0.5 em
shafighKurd     0.126 em plus 0.5 em
shafighUzbek    0.123 em plus 0.5 em
shiraz          0.122 em plus 0.5 em
sols            0.124 em plus 0.5 em
tabriz          0.119 em plus 0.5 em
titr            0.12 em plus 0.5 em
titre           0.121 em plus 0.5 em
traffic         0.124 em plus 0.5 em
vahid           0.134 em plus 0.5 em
vosta           0.136 em plus 0.5 em
yaghut          0.138 em plus 0.5 em
yagut           0.137 em plus 0.5 em
yas             0.126 em plus 0.5 em
yekan           0.141 em plus 0.5 em
yermook         0.139 em plus 0.5 em
zar             0.116 em plus 0.5 em
ziba            0.119 em plus 0.5 em
default         0.14 em plus 0.5 em
noskip          0 em plus 0.5 em
```

  For example: 'kashidastretch=titr' is equivalent to 'kashidastretch=0.12 em plus 0.5 em'

# 4  Commands

\KashidaOff:

  disables kashida justification.

**\KashidaOn**:

> enables kashida justification. If the option Kashida is activated stretching the text is the default behavior.

**\discouragebadlinebreaks[linebreakpenalty][kashidastretch]{*text*}**:

> *text* may not contain paragraph breaks. This command puts a penalty after each Persian word. The optional arguments `linebreakpenalty` and `kashidastretch` locally specify the value of the penalty and the amount of extra stretching for some combinations of characters respectively as discussed previously. For example you may set this option as follows:
>
> `\discouragebadlinebreaks[9][0.12 em plus 0.5 em]{...}`

# 5   Important notes

Kashida and ligatures:

> The method used to implement kashida feature breaks a ligature if it is applied to the letters which are joined to form the ligature. This is fixed in xepersian-hm, but it is not well developed yet.

# 6   Acknowledgments

In the first place I have to thank Donald Knuth for inventing TeX. During the development of this package I refered to Stack Exchange network of question-and-answer (Q&A) websites to solve problems for which I am grateful. I also would like to thank the developer teams of TeX's friends especially LaTeX, LuaTeX and XeTeX teams.

# 7   Change History

### 2020-03-17 v0.1

- First standalone version.

### 2020-03-19 v0.2

- Some minor changes.

### 2020-03-23 v0.3

- Added documentation

### 2020-03-26 v0.4

- Added DTX and INS files

### 2020-04-20 v0.5a

- Added Kashida=glyph to the package options

- Added \discouragebadlinebreaks to prevent bad line breaks in a text (less than a paragragraph).

### 2020-04-26 v0.5b

- If the kashida glyph is used to stretch the text, then the main font is checked for availability of the kashida character.

- Two optional arguments added in \discouragebadlinebreaks macro.

### 2020-05-01 v0.5c

- The documentation is divided into two parts: User documentation and Source code documentation.

- The example file is divided into two parts: An example for the option Kashida=glyph and the other one for Kashida=hrule.

### 2020-05-07 v0.5d

- Added a new section to the user documentation titled: Brief outline of the issues.

- An error is trigerred if the value of Kashida option is not specified.

### 2020-05-12 v0.5e

- Disturbance of ligatures caused by activation of kashida is fixed.

### 2020-05-20 v0.5f

- Reduced the length of items created by zref package in \jobname.aux file.

- If the option Kashida=glyph is used, a warning message is added to the log file which emphasizes that the option is experimental.

### 2020-05-31 v1.0a

- The option 'Kashida=hrule' is changed to 'Kashida=leaders+hrule'.

- The option 'Kashida=leaders+glyph' is added. Since with this option kashida glyph leaders are used to stretch the text, nothing is saved in .aux files.

### 2020-06-04 v1.0b

- Added two options Kashida=On and Kashida=Off.

### 2020-07-20 v1.0c

- Fixed the problem with the option ligatures=default.

### 2020-08-05 v1.0d

- In the new version of LaTeX3, the name of some of the XeTeX control sequences has changed. These changes are applied in this version of xepersion-hm.

### 2020-09-04 v1.1a

- Added the color option.

- Added a few sections to the User Documentation.

- Split the file containing kashida code.

## To Do's

To do

## References:

*Actually, this is not a "References" nor a "Literature", but the most important although not a complete list of "Resources Used" to develop this package.*

[1] Donald E. Knuth, *The TEX book*, Addison-Wesley, 1986.

[2] Victor Eijkhout, *TEX BY TOPIC*, Addison-Wesley, 2013.

[3] Paul W. Abrahams, Kathryn A. Hargreaves, and Karl Berry, *TEX for the Impatient*, Addison-Wesley, 2013.

[4] Leslie Lamport, *LaTeX, A document preparation System*, Addison-Wesley, 1986.

[5] Frank Mittelbach and Michel Goossens with Johannes Braams, David Carlisle, and Chris Rowley, *The LaTeX Companion*, Addison-Wesley, second edition, 2004.

[6] Package `latex`: The LaTeX Team, *The LaTeX 2ε Sources*, CTAN:macros/latex/base/source2e.pdf, 2020-02-02

[7] Package `l3kernel`: The LaTeX3 Team, *The LATEX3 Sources*, CTAN:macros/latex/contrib/l3kernel/source3.pdf, 2020-07-17

[8] Package `l3kernel`: The LaTeX3 Team, *The LATEX3 Interfaces*, CTAN:macros/latex/contrib/l3kernel/interface3.pdf, 2020-07-17

[9] Package `xetexref`: Will Robertson, Khaled Hosny, and Karl Berry, XƎTEX reference guide, CTAN:info/xetexref/xetex-reference.pdf, 2019-12-09

[10] Package `xetex`: Jonathan Kew, About XƎTEX, CTAN:systems/doc/xetex/XeTeX-notes.pdf, 2005-10-17

[11] Package `xetex`: Michel Goossens, The XƎTEX Companion, http://xml.web.cern.ch/XML/lgc2/xetexmain.pdf, 2009-08-19

[12] Website: Stack Exchange: Hot Questions, TEX-LATEX Q&A for users of TeX, LaTeX, ConTeXt, and related typesetting systems, tex.stackexchange.com

# Index

XƎPersian

# Example of Use

Engine: XeTeX using xepersian

Kashida=leaders+hrule

File: TEXMFDIST/doc/latex/texnegar/xepersian-XB.tex

| | |
|---|---|
| Font: | XB Kayhan |
| Font Scale: | 4.5 |
| color: | red |

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چاپی راهی تلاشِهـابی
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Engine: XeTeX using xepersian,
Style: Oblique,
Kashida: leaders+hrule On

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Engine: XeTeX using xepersian,
Style: Pook,
Kashida: leaders+hrule On

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XePersianHM

# Example of Use

Engine: XeTeX using xepersian-hm

## Kashida=glyph

File: TEXMFDIST/doc/xelatex/xepersian-hm/xepersian-hm-glyph.tex

| | |
|---|---|
| Font: | HM XKayhan |
| Font Scale: | 4.5 |
| linebreakpenalty: | 8 |
| kashidastretch: | 0.14em plus 5.5em |
| color: | red |

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Engine: XeTeX using xepersian-hm,
Style: Italic,
Kashida: glyph (On)

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Engine: XeTeX using xepersian-hm,
Style: Outline,
Kashida: glyph (On)

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XePersianHM

# Example of Use

Engine: XeTeX using xepersian-hm

Kashida=leaders+glyph

File: TEXMFDIST/doc/xelatex/xepersian-hm/xepersian-hm-leaders-glyph.tex

| | |
|---|---|
| Font: | HM XKayhan |
| Font Scale: | 4.5 |
| linebreakpenalty: | 8 |
| kashidastretch: | 0.14em plus 5.5em |
| color: | red |

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Engine: XeTeX using xepersian-hm,
Style: Outline,
Kashida: glyph (On)

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Engine: XeTeX using xepersian-hm,
Style: Shadow,
Kashida: glyph (On)

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که کتابهایی
که کلاههایی که
کتابهایی

راهی جایی تابی

چاپی چاههی

تلاشهایی شتابهایی

تابی چاپی راهی

تلاشهایی که

کتابهایی که

کلاههایی که

کتابهایی

Engine: XeTeX using xepersian-hm,
Style: Navaar,
Kashida: glyph (On)

راهی جایی تابی

چاپی چاههی

تلاشهایی شتابهایی

تابی چاپی راهی

تلاشهایی

که کتابهایی

که کلاههایی که

کتابهایی

XePersianHM

# Example of Use

Engine: XeTeX using xepersian-hm

Kashida=leaders+hrule

File: TEXMFDIST/doc/xelatex/xepersian-hm/xepersian-hm-leaders-hrule.tex

| | |
|---|---|
| Font: | HM XKayhan |
| Font Scale: | 4.5 |
| linebreakpenalty: | 8 |
| kashidastretch: | 0.14em plus 5.5em |
| color: | red |

راهی جایی تابی چاپی

چاههی تلاشهایی

شتابهایی تابی چاپی

راهی تلاشهایی که

کتابهایی که کلاههایی

که کتابهایی

راهی جایی تابی چاپی

چاههی تلاشههایی

شتابهایی تابی چاپی

راهی تلاشههایی که

کتابهایی که کلاههایی

که کتابهایی

راهی جایی تابی چاپی
چاههی تلاشهایی
شتابهایی تابی چاپی
راهی تلاشهایی که
کتابهایی که کلاههایی
که کتابهایی

راهی جایی تابی چاپی
چاههی تلاشهایی
شتابهایی تابی چاپی
راهی تلاشهـایی که
کتابهایی که کلاههایی
که کتابهایی

راهی جایی تابی چاپی

چاههی تلاشهایی

شتابهایی تابی چاپی

راهی تلاشهایی که

کتابهایی که کلاههایی

که کتابهایی

Engine: XeTeX using xepersian-hm,
Style: Shadow,
Kashida: glyph (On)

راهی جایی تابی چاپی

چاههی تلاشهایی

شتابهایی تابی چاپی

راهی تلاشهـایی که

کتابهایی که کلاههایی

که کتابهایی

راهی جایی تابی

چاپی چاههی

تلاشهایی شتابهایی

تابی چاپی راهی

تلاشههایی

که کتابهایی

که کلاههایی که

کتابهایی

Engine: XeTeX using xepersian-hm,
Style: Sayeh,
Kashida: glyph (On)

راهی جایی تابی

چاپی چاههی

تلاشهایی شتابهایی

تابی چاپی راهی

تلاشهایی که

کتابهایی که

کلاههایی که

کتابهایی

راهی جایی تابی

چایی چاههی

تلاشهایی شتابهایی

تابی چایی راهی

تلاشهایی

که کتابهایی

که کلاههایی که

کتابهایی