

# Emacs 26 特性

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## 1 本文档说明

这是 Emacs 26 版本发布说明的中文翻译版本：

GNU Emacs NEWS – history of user-visible changes.

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Please send Emacs bug reports to [bug-gnu-emacs@gnu.org](mailto:bug-gnu-emacs@gnu.org). If possible, use `M-x report-emacs-bug`.

This file is about changes in Emacs version 26.

See file `HISTORY` for a list of GNU Emacs versions and release dates. See files `NEWS.25`, `NEWS.24`, ..., `NEWS.18`, and `NEWS.1-17` for changes in older Emacs versions.

You can narrow news to a specific version by calling `'view-emacs-news'` with a prefix argument or by typing `C-u C-h C-n`.

## 2 Emacs 26.2 安装变化

### 2.1 使用`'-with-xwidgets'` 参数构建 Emacs 需要依赖 WebKit2

构建支持 `xwidgets` 版本的 Emacs, 需要先安装 `webkit2gtk-4.0` 包, 要求版本在 2.12 及以上版本。这个改变其实从 Emacs 26.1 开始的, 只不过没有发布文档里提到。

## 3 Emacs 26.2 中特殊模式和包的变化

### 3.1 Gnus

Mailutils `movemail` will now be used if found at runtime. **mail-source-movemail-program** 这个变量的默认值已经改为 **movemail**。这样做的目的是确保使用 GNU 的邮件工作包里的移动邮件程序, 如果发现它在 `exec-path` 目录里 (即使在构建时没有找到)。可以通过定制 **mail-source-movemail-program** 变量的值来切换到其他程序。

### 3.2 Shell 模式

Shell 模式下的 Buffer 的 **scroll-conservatively** 变量默认值变为 101。这样使得在 Shell 模式下, 当有新的输出添加到屏幕时, 更好地模拟在文本终端下的滚动行为。重新将 **scroll-conservatively** 变量的值设置为 0 或者任何其他值, 就可回退出老版本的行为 (可以在 `shell-mode-hook` 的函数列表中设置)。这个改变也是从 Emacs 26.1 就有, 不过没有在其文档中提到。

### 3.3 VC

优化了 VC 对 Mercurial 的支持。Emacs 为了更快的操作速度, 尽量避免唤起 **hg**。



### 3.3.1 新 vc-hg 选项

新增'vc-hg-parse-hg-data-structures' 用来控制 vc-hg 是否解析直接 Mercurial 数据结构, 或者采用执行 hg 来替代。默认值为 t (老版本值为 nil)。

新增'vc-hg-symbolic-revision-styles' 用来控制在 mode line 模式下版本的展示样式。

新增'vc-hg-use-file-version-for-mode-line-version' 用来控制将版本展示在 mode line 里是那些已经访问过的文件还是那整体工作仓库的拷贝。

### 3.3.2 Mercurial 版本在 mode-line 的显示变化

老版本, mode-line 显示的是本地修改的版本数值 (1, 2, 3, ...)。从 26.1 版本开始, 默认显示做了变化, 当前显示的是全局的修改版本值, 格式为修改的 hash 值。如果想恢复到之前的显示, 只需要修改变量 **vc-hg-symbolic-revision-styles** 的值为 ("{rev}")。

## 4 Emacs 26.1 安装变化

### 4.1 默认情况下编译 Emacs 需要 libgnutls 这个库

采用 `configure --with-gnutls=no` 这个选项已经废弃。

### 4.2 GnuTLS 版本需要 2.12.2 或者更高版本

### 4.3 The new option 'configure --with-mailutils' causes Emacs to rely on

GNU Mailutils to retrieve email. It is recommended, and is the default if GNU Mailutils is installed. When `--with-mailutils` is not in effect, the Emacs build procedure by default continues to build and install a limited 'movemail' substitute that retrieves POP3 email only via insecure channels. To avoid this problem, use either `--with-mailutils` or `--without-pop` when configuring; `--without-pop` is the default on platforms other than native MS-Windows.

### 4.4 The new option 'configure --enable-gcc-warnings=warn-only' causes

GCC to issue warnings without stopping the build. This behavior is now the default in developer builds. As before, use '`--disable-gcc-warnings`' to suppress GCC's warnings, and '`--enable-gcc-warnings`' to stop the build if GCC issues warnings.

#### **4.5 When GCC warnings are enabled, `'--enable-check-lisp-object-type'` is**

now enabled by default when configuring.

#### **4.6 The Emacs server now has socket-launching support. This allows**

socket based activation, where an external process like systemd can invoke the Emacs server process upon a socket connection event and hand the socket over to Emacs. Emacs uses this socket to service emacsclient commands. This new functionality can be disabled with the configure option `'--disable-libsystemd'`.

#### **4.7 A systemd user unit file is provided. Use it in the standard way:**

`'systemctl --user enable emacs'`. (If your Emacs is installed in a non-standard location, you may need to copy the emacs.service file to eg `~/.config/systemd/user/`)

#### **4.8 New configure option `'--disable-build-details'` attempts to build an**

Emacs that is more likely to be reproducible; that is, if you build and install Emacs twice, the second Emacs is a copy of the first. Deterministic builds omit the build date from the output of the `'emacs-version'` and `'erc-cmd-SV'` functions, and the leave the following variables nil: `'emacs-build-system'`, `'emacs-build-time'`, `'erc-emacs-build-time'`.

#### **4.9 Emacs can now be built with support for Little CMS.**

If the lcms2 library is installed, Emacs will enable features built on top of that library. The new configure option `'--without-lcms2'` can be used to build without lcms2 support even if it is installed. Emacs linked to Little CMS exposes color management functions in Lisp: the color metrics `'lcms-cie-de2000'` and `'lcms-cam02-ucs'`, as well as functions for conversion to and from CIE CAM02 and CAM02-UCS.

#### **4.10 The configure option `'--with-gameuser'` now defaults to `'no'`,**

as this appears to be the most common configuration in practice. When it is `'no'`, the shared game directory and the auxiliary program `update-game-score` are no longer needed and are not installed.

#### **4.11 Emacs 不再对 IRIX 系统做支持**

我们希望这部分 Emacs 用户不会因此受到影响, 因为 SGI 从 2013 年 12 月份开始已经停止了对 IRIX 的支持。

### **5 Emacs 26.1 启动的变化**

#### **5.1 新增`'fg-daemon'` 选项**

这个选项跟`'daemon'` 类似, 只有一点不一样的那就是它是运行在前台并且不是 fork 的。这个选项的目的是用于现在启动系统, 如 `systemd`, 它管理许多传统的常住行为 (daemon behavior)。同时, 这个`'bg-daemon'` 选项是`'daemon'` 的别名。

#### **5.2 新增`'module-assertions'` 选项**

When given this option, Emacs will perform expensive correctness checks when dealing with dynamic modules. This is intended for module authors that wish to verify that their module conforms to the module requirements. The option makes Emacs abort if a module-related assertion triggers.

#### **5.3 Emacs now supports 24-bit colors on capable text terminals.**

Terminal is automatically initialized to use 24-bit colors if the required capabilities are found in `terminfo`. See the FAQ node `"(efaq) Colors on a TTY"` for more information.

#### **5.4 Emacs 在启动的时候遵守 X 资源`"scrollBar"`**

这个效果与工具条 ( tool bar ) 里的`"toolBar"` 资源类似。

## 6 Emacs 26.1 的变化

### 6.1 'buffer-offer-save' 添加新值

'buffer-offer-save' 添加新的选项'always'。当配置为这个值时命令'save-some-buffers' 将这个 buffer 作为保存项 (offer this buffer for saving)。

### 6.2 Security vulnerability related to Enriched Text mode is removed.

#### 6.2.1 Enriched Text mode does not evaluate Lisp in 'display' properties.

This feature allows saving 'display' properties as part of text. Emacs 'display' properties support evaluation of arbitrary Lisp forms as part of processing the property for display, so displaying Enriched Text could be vulnerable to executing arbitrary malicious Lisp code included in the text (e.g., sent as part of an email message). Therefore, execution of arbitrary Lisp forms in 'display' properties decoded by Enriched Text mode is now disabled by default. Customize the new option 'enriched-allow-eval-in-display-props' to a non-nil value to allow Lisp evaluation in decoded 'display' properties.

This vulnerability was introduced in Emacs 21.1. To work around that in Emacs versions before 25.3, append the following to your ~/.emacs init file:

```
(eval-after-load "enriched" '(defun enriched-decode-display-prop (start end &optional param) (list start end)))
```

### 6.3 Functions in 'write-content-functions' can fully short-circuit the

'save-buffer' process. Previously, saving a buffer that was not visiting a file would always prompt for a file name. Now it only does so if 'write-content-functions' is nil (or all its functions return nil).

### 6.4 New variable 'executable-prefix-env' for inserting magic signatures.

This variable affects the format of the interpreter magic number inserted by 'executable-set-magic'. If non-nil, the magic number now takes the form "#!/usr/bin/env interpreter", otherwise the value determined by 'executable-prefix', which is by default "#!/path/to/interpreter". By default, 'executable-prefix-env' is nil, so the default behavior is not changed.

### **6.5 The variable 'emacs-version' no longer includes the build number.**

This is now stored separately in a new variable, 'emacs-build-number'.

### **6.6 Emacs now provides a limited form of concurrency with Lisp threads.**

Concurrency in Emacs Lisp is "mostly cooperative", meaning that Emacs will only switch execution between threads at well-defined times: when Emacs waits for input, during blocking operations related to threads (such as mutex locking), or when the current thread explicitly yields. Global variables are shared among all threads, but a 'let' binding is thread-local. Each thread also has its own current buffer and its own match data.

See the chapter "(elisp) Threads" in the ELisp manual for full documentation of these facilities.

### **6.7 The new user variable 'electric-quote-chars' provides a list**

of curved quotes for 'electric-quote-mode', allowing user to choose the types of quotes to be used.

### **6.8 The new user option 'electric-quote-context-sensitive' makes**

'electric-quote-mode' context sensitive. If it is non-nil, you can type an ASCII apostrophe to insert an opening or closing quote, depending on context. Emacs will replace the apostrophe by an opening quote character at the beginning of the buffer, the beginning of a line, after a whitespace character, and after an opening parenthesis; and it will replace the apostrophe by a closing quote character in all other cases.

### **6.9 The new variable 'electric-quote-inhibit-functions' controls when**

to disable electric quoting based on context. Major modes can add functions to this list; Emacs will temporarily disable 'electric-quote-mode' whenever any of the functions returns non-nil. This can be used by major modes that derive from 'text-mode' but allow inline code segments, such as 'markdown-mode'.

### **6.10 The new user variable 'dired-omit-case-fold' allows the user to**

customize the case-sensitivity of dired-omit-mode. It defaults to the same sensitivity as that of the filesystem for the corresponding dired buffer.

### **6.11 Emacs now uses double buffering to reduce flicker when editing and**

resizing graphical Emacs frames on the X Window System. This support requires the DOUBLE-BUFFER extension, which major X servers have supported for many years. If your system has this extension, but an Emacs built with double buffering misbehaves on some displays you use, you can disable the feature by adding

```
(inhibit-double-buffering . t)
to default-frame-alist. Or inject this parameter into the selected frame
by evaluating this form:
(modify-frame-parameters nil '((inhibit-double-buffering . t)))
```

### **6.12 The customization group 'wp', whose label was "text", is now**

deprecated. Use the new group 'text', which inherits from 'wp', instead.

### **6.13 The new function 'call-shell-region' executes a command in an**

inferior shell with the buffer region as input.

### **6.14 The new user option 'shell-command-dont-erase-buffer' controls**

if the output buffer is erased between shell commands; if non-nil, the output buffer is not erased; this variable also controls where to set the point in the output buffer: beginning of the output, end of the buffer or save the point. When 'shell-command-dont-erase-buffer' is nil, the default value, the behavior of 'shell-command', 'shell-command-on-region' and 'async-shell-command' is as usual.

### **6.15 The new user option 'async-shell-command-display-buffer' controls**

whether the output buffer of an asynchronous command is shown immediately, or only when there is output.

### **6.16 New user option 'mouse-select-region-move-to-beginning'.**

This option controls the position of point when double-clicking mouse-1 on the end of a parenthetical grouping or string-delimiter: the default value nil keeps point at the end of the region, setting it to non-nil moves point to the beginning of the region.

### **6.17 New user option 'mouse-drag-and-drop-region'.**

This option allows you to drag the entire region of text to another place or another buffer. Its behavior is customizable via the new options 'mouse-drag-and-drop-region-cut-when-buffers-differ', 'mouse-drag-and-drop-region-show-tooltip', and 'mouse-drag-and-drop-region-show-cursor'.

### **6.18 The new user option 'confirm-kill-processes' allows the user to**

skip a confirmation prompt for killing subprocesses when exiting Emacs. When set to t (the default), Emacs will prompt for confirmation before killing subprocesses on exit, which is the same behavior as before.

### **6.19 'find-library-name' will now fall back on looking at 'load-history'**

to try to locate libraries that have been loaded with an explicit path outside 'load-path'.

### **6.20 Faces in 'minibuffer-prompt-properties' no longer overwrite properties**

in the text in functions like 'read-from-minibuffer', but instead are added to the end of the face list. This allows users to say things like '(read-from-minibuffer (promptize "Enter something: " 'face 'bold))'.

**6.21 The new variable 'extended-command-suggest-shorter' has been added**

to control whether to suggest shorter 'M-x' commands or not.

**6.22 icode now respects 'completion-ignored-extensions'.**

**6.23 Non-breaking hyphens are now displayed with the 'nobreak-hyphen'**

face instead of the 'escape-glyph' face.

**6.24 Approximations to quotes are now displayed with the new 'homoglyph'**

face instead of the 'escape-glyph' face.

**6.25 New face 'header-line-highlight'.**

This face is the header-line analogue of 'mode-line-highlight'; it should be the preferred mouse-face for mouse-sensitive elements in the header line.

**6.26 'C-x h' ('mark-whole-buffer') will now avoid marking the prompt**

part of minibuffers.

**6.27 'fill-paragraph' no longer marks the buffer as changed unless it**

actually changed something.

**6.28 The locale language name 'ca' is now mapped to the language**

environment 'Catalan', which has been added.

**6.29 'align-regexp' has a separate history for its interactive argument.**

'align-regexp' no longer shares its history with all other history-less functions that use 'read-string'.



### **6.30 The networking code has been reworked so that it's more**

asynchronous than it was (when specifying `:nowait t` in `'make-network-process'`). How asynchronous it is varies based on the capabilities of the system, but on a typical GNU/Linux system the DNS resolution, the connection, and (for TLS streams) the TLS negotiation are all done without blocking the main Emacs thread. To get asynchronous TLS, the TLS boot parameters have to be passed in (see the manual for details).

Certain process oriented functions (like `'process-datagram-address'`) will block until socket setup has been performed. The recommended way to deal with asynchronous sockets is to avoid interacting with them until they have changed status to "run". This is most easily done from a process sentinel.

### **6.31 'make-network-process' and 'open-network-stream' sometimes allowed**

`:service` to be an integer string (e.g., `:service "993"`) and sometimes required an integer (e.g., `:service 993`). This difference has been eliminated, and integer strings work everywhere.

### **6.32 It is possible to disable attempted recovery on fatal signals.**

Two new variables support disabling attempts to recover from stack overflow and to avoid automatic auto-save when Emacs is delivered a fatal signal. `'attempt-stack-overflow-recovery'`, if set to nil, will disable attempts to recover from C stack overflows; Emacs will then crash as with any other fatal signal. `'attempt-orderly-shutdown-on-fatal-signal'`, if set to nil, will disable attempts to auto-save the session and shut down in an orderly fashion when Emacs receives a fatal signal; instead, Emacs will terminate immediately. Both variables are non-nil by default. These variables are for users who would like to avoid the small probability of data corruption due to techniques Emacs uses to recover in these situations.

### **6.33 File local and directory local variables are now initialized each**

time the major mode is set, not just when the file is first visited. These local variables will thus not vanish on setting a major mode.

**6.34 A second dir-local file (.dir-locals-2.el) is now accepted.**

See the doc string of 'dir-locals-file' for more information.

**6.35 Connection-local variables can be used to specify local variables**

with a value depending on the connected remote server. For details, see the node "(elisp) Connection Local Variables" in the ELisp manual.

**6.36 International domain names (IDNA) are now encoded via the new**

puny.el library, so that one can visit Web sites with non-ASCII URLs.

**6.37 The new 'list-timers' command lists all active timers in a buffer,**

where you can cancel them with the 'c' command.

**6.38 'switch-to-buffer-preserve-window-point' now defaults to t.**

Applications that call 'switch-to-buffer' and want to show the buffer at the position of its point should use 'pop-to-buffer-same-window' in lieu of 'switch-to-buffer'.

**6.39 The new variable 'debugger-stack-frame-as-list' allows displaying**

all call stack frames in a Lisp backtrace buffer as lists. Both debug.el and edebug.el have been updated to heed to this variable.

**6.40 Values in call stack frames are now displayed using 'cl-prin1'.**

The old behavior of using 'prin1' can be restored by customizing the new option 'debugger-print-function'.

**6.41** NUL bytes in text copied to the system clipboard are now replaced with `"\0"`.

**6.42** The new variable `'x-ctrl-keysym'` has been added to the existing

roster of X keysyms. It can be used in combination with another variable of this kind to swap modifiers in Emacs.

**6.43** New input methods: `'cyrillic-tuvan'`, `'polish-prefix'`, `'uzbek-cyrillic'`.

**6.44** The `'dutch'` input method no longer attempts to support Turkish too.

Also, it no longer converts `'IJ'` and `'ij'` to the compatibility characters U+0132 LATIN CAPITAL LIGATURE IJ and U+0133 LATIN SMALL LIGATURE IJ.

**6.45** File name quoting by adding the prefix `"/:"` is now possible for the

local part of a remote file name. Thus, if you have a directory named `"~"` on the remote host `"foo"`, you can prevent it from being substituted by a home directory by writing it as `"/foo::~~/file"`.

**6.46** The new variable `'maximum-scroll-margin'` allows having effective

settings of `'scroll-margin'` up to half the window size, instead of always restricting the margin to a quarter of the window.

**6.47** Emacs can scroll horizontally using mouse, touchpad, and trackbar.

You can enable this by customizing `'mouse-wheel-tilt-scroll'`. If you want to reverse the direction of the scroll, customize `'mouse-wheel-flip-direction'`.

**6.48** The default GnuTLS priority string now includes `%DUMBFW`.

This is to avoid bad behavior in some firewalls, which causes the connection to be closed by the remote host.

## **6.49 Emacsclient changes**

### **6.49.1 Emacsclient has a new option '-u' / '--suppress-output'.**

This option suppresses display of return values from the server process.

### **6.49.2 Emacsclient has a new option '-T' / '--tramp'.**

This helps with using a local Emacs session as the server for a remote emacsclient. With appropriate setup, one can now set the EDITOR environment variable on a remote machine to emacsclient, and use the local Emacs to edit remote files via Tramp. See the node "(emacs) emacsclient Options" in the user manual for the details.

### **6.49.3 Emacsclient now accepts command-line options in ALTERNATE<sub>EDITOR</sub>**

and '--alternate-editor'. For example, ALTERNATE<sub>EDITOR</sub>="emacs -Q -nw". Arguments may be quoted "like this", so that for example an absolute path containing a space may be specified; quote escaping is not supported.

## **6.50 New user option 'dig-program-options' and extended functionality**

for DNS-querying functions 'nslookup-host', 'dns-lookup-host', and 'run-dig'. Each function now accepts an optional name server argument interactively (with a prefix argument) and non-interactively.

### **6.51 'describe-key-briefly' now ignores mouse movement events.**

### **6.52 The new variable 'eval-expression-print-maximum-character' prevents**

large integers from being displayed as characters by 'M-:' and similar commands.

### **6.53 Two new commands for finding the source code of Emacs Lisp**

libraries: 'find-library-other-window' and 'find-library-other-frame'.

### 6.54 The new variable 'display-raw-bytes-as-hex' allows you to change

the display of raw bytes from octal to hex.

### 6.55 You can now provide explicit field numbers in format specifiers.

For example, '(format "%2\$s %1\$s %2\$s" "X" "Y")' produces "Y X Y".

### 6.56 Emacs 支持在 Buffer 里显示行号 (可选项)

这个显示行号的原生支持与之前的 **linum-mode** 提供的功能一样，但它更快。并且，不会因为行号的显示而占用边距。通过配置 Buffer 本地变量 **display-line-numbers** 去开启这个行号显示项。或者还可以通过打开 **display-line-numbers-mode** 这个 minor 模式也能达到相同效果。还有一种方式，那就是打开全局的 **global-display-line-numbers-mode** 模式。当这些模式打开后，配置 **display-line-numbers-type** 的值会与 **display-line-numbers** 的值相同。行号不会显示在所有的 minibuffer 的窗口以及提示窗口，因为他们不是用于此处。

Lisp 程序可以通过设置 **display-line-numbers-disable** 的文本属性或者屏幕当前行第一个字符的属性来关闭此功能。做成可配置的包目的是为了更好地做显示控制。Lisp 程序想知道多少屏幕宽度被行号所占用，可以通过 **line-number-display-width** 这个函数来获取。**linum-mode** 和其他类似的包可以废弃，不再使用。Emacs 官方推荐使用新的原生方法来显示行号。

### 6.57 添加'arabic-shaper-ZWNJ-handling' 用户选项用来处理 Arabic 文本渲染中的 ZWNJ 问题

## 7 Emacs 26.1 中编辑操作的变化

### 7.1 新加变量'column-number-indicator-zero-based'.

Traditionally, in Column Number mode, the displayed column number counts from zero starting at the left margin of the window. This behavior is now controlled by 'column-number-indicator-zero-based'. If you would prefer for the displayed column number to count from one, you may set this variable to nil. (Behind the scenes, there is now a new mode line construct, '%C', which operates exactly as '%c' does except that it counts from one.)

## 7.2 New single-line horizontal scrolling mode.

The 'auto-hscroll-mode' variable can now have a new special value, 'current-line', which causes only the line where the cursor is displayed to be horizontally scrolled when lines are truncated on display and point moves outside the left or right window margin.

## 7.3 New mode line constructs '%o' and '%q', and user option

'mode-line-percent-position'. '%o' displays the "degree of travel" of the window through the buffer. Unlike the default '%p', this percentage approaches 100% as the window approaches the end of the buffer. '%q' displays the percentage offsets of both the start and the end of the window, e.g. "5-17%". The new option 'mode-line-percent-position' makes it easier to switch between '%p', '%P', and these new constructs.

## 7.4 Two new user options 'list-matching-lines-jump-to-current-line' and

'list-matching-lines-current-line-face' to show the current line highlighted in **Occur** buffer.

## 7.5 The 'occur' command can now operate on the region.

## 7.6 New bindings for 'query-replace-map'.

'undo', undo the last replacement; bound to 'u'. 'undo-all', undo all replacements; bound to 'U'.

## 7.7 'delete-trailing-whitespace' deletes whitespace after form feed.

In modes where form feed was treated as a whitespace character, 'delete-trailing-whitespace' would keep lines containing it unchanged. It now deletes whitespace after the last form feed thus behaving the same as in modes where the character is not whitespace.

## 7.8 Emacs no longer prompts about editing a changed file when the file's

content is unchanged. Instead of only checking the modification time, Emacs now also checks the file's actual content before prompting the user.

## **7.9 Various casing improvements.**

### **7.9.1 'upcase', 'upcase-region' et al. convert title case characters**

(such as `Ungla`) into their upper case form (such as `UNGLA`).

### **7.9.2 'capitalize', 'upcase-initials' et al. make use of title-case forms**

of initial characters (correctly producing for example `Ungla` instead of incorrect `ungla`).

### **7.9.3 Characters which turn into multiple ones when cased are correctly handled.**

For example, `fi` ligature is converted to `FI` when upper cased.

### **7.9.4 Greek small sigma is correctly handled when at the end of the word.**

Strings such as `ΟΣΟΣ` are now correctly converted to `Ο` when capitalized instead of incorrect `Ο` (compare lowercase sigma at the end of the word).

## **7.10 Emacs can now auto-save buffers to visited files in a more robust**

manner via the new mode `'auto-save-visited-mode'`. Unlike `'auto-save-visited-file-name'`, this mode uses the normal saving procedure and therefore obeys saving hooks. `'auto-save-visited-file-name'` is now obsolete.

## **7.11 New behavior of 'mark-defun'.**

Prefix argument selects that many (or that many more) defuns. Negative prefix arg flips the direction of selection. Also, `'mark-defun'` between defuns correctly selects `N` following defuns (or `-N` previous for negative arguments). Finally, comments preceding the defun are selected unless they are separated from the defun by a blank line.

## **7.12 New command 'replace-buffer-contents'.**

This command replaces the contents of the accessible portion of the current buffer with the contents of the accessible portion of a different buffer while keeping point, mark, markers, and text properties as intact as possible.

### 7.13 New commands 'apropos-local-variable' and 'apropos-local-value'.

These are buffer-local versions of 'apropos-variable' and 'apropos-value', respectively. They show buffer-local variables whose names and values, respectively, match a given pattern.

### 7.14 More user control of reordering bidirectional text for display.

The two new variables, 'bidi-paragraph-start-re' and 'bidi-paragraph-separate-re', allow customization of what exactly are paragraphs, for the purposes of bidirectional display.

### 7.15 New variable 'x-wait-for-event-timeout'.

This controls how long Emacs will wait for updates to the graphical state to take effect (making a frame visible, for example).

## 8 Emacs 26.1 中特殊模式和包的变化

### 8.1 Emacs 26.1 采用 Org 9.1.6 版本.

具体变化可查看 ORG-NEWS 文件

### 8.2 新函数 cl-generic-p

### 8.3 Dired 的变化

#### 8.3.1 You can answer 'all' in 'dired-do-delete' to delete recursively all

remaining directories without more prompts.

#### 8.3.2 Dired supports wildcards in the directory part of the file names.

#### 8.3.3 You can now use '¿' in 'dired-do-shell-command'.

It gets replaced by the current file name, like ' ? '.



#### **8.3.4 A new option 'dired-always-read-filesystem' defaulting to nil.**

If non-nil, buffers visiting files are reverted before they are searched; for instance, in 'dired-mark-files-containing-regexp' a non-nil value of this option means the file is revisited in a temporary buffer; this temporary buffer is the actual buffer searched: the original buffer visiting the file is not modified.

#### **8.3.5 Users can now customize mouse clicks in Dired in a more flexible way.**

The new command 'dired-mouse-find-file' can be bound to a mouse click and used to visit files/directories in Dired in the selected window. The new command 'dired-mouse-find-file-other-frame' similarly visits files/directories in another frame. You can write your own commands that invoke 'dired-mouse-find-file' with non-default optional arguments, to tailor the effects of mouse clicks on file names in Dired buffers.

#### **8.3.6 In wdired, when editing files to contain slash characters,**

the resulting directories are automatically created. Whether to do this is controlled by the 'wdired-create-parent-directories' variable.

#### **8.3.7 'W' is now bound to 'browse-url-of-dired-file', and is useful for**

viewing HTML files and the like.

#### **8.3.8 New variable 'dired-clean-confirm-killing-deleted-buffers'**

controls whether Dired asks to kill buffers visiting deleted files and directories. The default is t, so Dired asks for confirmation, to keep previous behavior.

#### **8.4 html2text is now marked obsolete.**

#### **8.5 smerge-refine-regions can refine regions in separate buffers.**

#### **8.6 Info menu and index completion uses substring completion by default.**

This can be customized via the 'info-menu' category in 'completion-category-overrides'.

## **8.7 The ancestor buffer is shown by default in 3-way merges.**

A new option 'ediff-show-ancestor' and a new toggle 'ediff-toggle-show-ancestor'.

## **8.8 T<sub>E</sub>X: Add luatex and xetex as alternatives to pdftex**

## **8.9 Electric-Buffer-menu**

### **8.9.1 Key 'U' is bound to 'Buffer-menu-unmark-all' and key 'M-DEL' is**

bound to 'Buffer-menu-unmark-all-buffers'.

### **8.10 hideshow mode got four key bindings that are analogous to outline**

mode bindings: 'C-c @ C-a', 'C-c @ C-t', 'C-c @ C-d', and 'C-c @ C-e'.

## **8.11 bs**

### **8.11.1 Two new commands 'bs-unmark-all', bound to 'U', and 'bs-unmark-previous', bound to <backspace>.**

## **8.12 Buffer-menu**

### **8.12.1 Two new commands 'Buffer-menu-unmark-all', bound to 'U' and**

'Buffer-menu-unmark-all-buffers', bound to 'M-DEL'.

## **8.13 Checkdoc**

### **8.13.1 'checkdoc-arguments-in-order-flag' now defaults to nil.**

## **8.14 Gnus**

### **8.14.1 The ~/.newsrsrc file will now only be saved if the native select**

method is an NNTP select method.

### **8.14.2 A new command for sorting articles by readedness marks has been**

added: 'C-c C-s C-m C-m'.

### **8.14.3 In 'message-citation-line-format' the '%Z' format is now the time**

zone name instead of the numeric form. The '%z' format continues to be the numeric form. The new behavior is compatible with 'format-time-string'.

## **8.15 Ibuffer**

### **8.15.1 New command 'ibuffer-jump'.**

### **8.15.2 New filter commands 'ibuffer-filter-by-basename',**

'ibuffer-filter-by-file-extension', 'ibuffer-filter-by-directory', 'ibuffer-filter-by-starred-name', 'ibuffer-filter-by-modified' and 'ibuffer-filter-by-visiting-file'; bound respectively to 'b', '.', '//', '/\*', '/i' and '/v'.

### **8.15.3 Two new commands 'ibuffer-filter-chosen-by-completion'**

and 'ibuffer-and-filter', the second bound to '/&'.

### **8.15.4 The commands 'ibuffer-pop-filter', 'ibuffer-pop-filter-group',**

'ibuffer-or-filter' and 'ibuffer-filter-disable' have the alternative bindings '/<up>', '/S-<up>', '/|' and '/DEL', respectively.

### **8.15.5 The data format specifying filters has been extended to allow**

explicit logical 'and', and a more flexible form for logical 'not'. See 'ibuffer-filtering-qualifiers' doc string for full details.

### **8.15.6 A new command 'ibuffer-copy-buffername-as-kill'; bound**

to 'B'.

### **8.15.7 New command 'ibuffer-change-marks'; bound to '\* c'.**

### **8.15.8 A new command 'ibuffer-mark-by-locked' to mark**

all locked buffers; bound to '% L'.

### **8.15.9 A new option 'ibuffer-locked-char' to indicate**

locked buffers; Ibuffer shows a new column displaying 'ibuffer-locked-char' for locked buffers.

### **8.15.10 A new command 'ibuffer-unmark-all-marks' to unmark**

all buffers without asking confirmation; bound to 'U'; 'ibuffer-do-replace-regexp' bound to 'r'.

### **8.15.11 A new command 'ibuffer-mark-by-content-regexp' to mark buffers**

whose content matches a regexp; bound to '% g'.

### **8.15.12 Two new options 'ibuffer-never-search-content-name' and**

'ibuffer-never-search-content-mode' used by 'ibuffer-mark-by-content-regexp'.

## **8.16 Browse-URL**

### **8.16.1 Support for opening links to man pages in Man or WoMan mode.**

## **8.17 Comint**

### **8.17.1 New user option 'comint-move-point-for-matching-input' to control**

where to place point after 'C-c M-r' and 'C-c M-s'.

### **8.17.2 New user option 'comint-terminfo-terminal'.**

This option allows control of the value of the TERM environment variable Emacs puts into the environment of the Comint mode and its derivatives, such as Shell mode and Compilation Shell minor-mode. The default is "dumb", for compatibility with previous behavior.

## 8.18 Compilation mode

**8.18.1** Messages from CMake are now recognized.

**8.18.2** The number of errors, warnings, and informational messages is now

displayed in the mode line. These are updated as compilation proceeds.

## 8.19 Grep

**8.19.1** Grep commands will now use GNU grep's '-null' option if available, which allows distinguishing the filename from contents if they contain colons. This can be controlled by the new custom option 'grep-use-null-filename-separator'.

**8.19.2** The grep/rgrep/lgrep functions will now ask about saving files

before running. This is controlled by the 'grep-save-buffers' variable.

## 8.20 Edebug

**8.20.1** Edebug can be prevented from pausing 1 second after reaching a

breakpoint (e.g. with "f" and "o") by customizing the new option 'edebug-sit-on-break'.

**8.20.2** New customizable option 'edebug-max-depth'.

This allows you to enlarge the maximum recursion depth when instrumenting code.

**8.20.3** 'edebug-prin1-to-string' now aliases 'cl-prin1-to-string'.

This means edebug output is affected by variables 'cl-print-readably' and 'cl-print-compiled'. To completely restore the previous printing behavior, use

```
(fset 'edebug-prin1-to-string #'prin1-to-string)
```

## 8.21 Eshell

### 8.21.1 'eshell-input-filter's value is now a named function

'eshell-input-filter-default', and has a new custom option 'eshell-input-filter-initial-space' to ignore adding commands prefixed with blank space to eshell history.

## 8.22 EUDC

### 8.22.1 Backward compatibility support for BBDB versions less than 3

(i.e., BBDB 2.x) is deprecated and will likely be removed in the next major release of Emacs. Users of BBDB 2.x should plan to upgrade to BBDB 3.x.

## 8.23 eww

### 8.23.1 New 'M-RET' command for opening a link at point in a new eww buffer.

### 8.23.2 A new 's' command for switching to another eww buffer via the minibuffer.

### 8.23.3 The 'o' command ('shr-save-contents') has moved to 'O' to avoid collision

with the 'o' command from 'image-map'.

### 8.23.4 A new command 'C' ('eww-toggle-colors') can be used to toggle

whether to use the HTML-specified colors or not. The user can also customize the 'shr-use-colors' variable.

### 8.23.5 Images that are being loaded are now marked with gray

"placeholder" images of the size specified by the HTML. They are then replaced by the real images asynchronously, which will also now respect width/height HTML specs (unless they specify widths/heights bigger than the current window).

### **8.23.6 The 'w' command on links is now 'shr-maybe-probe-and-copy-url'.**

'shr-copy-url' now only copies the url at point; users who wish to avoid accidentally accessing remote links may rebind 'w' and 'u' in 'eww-link-keymap' to it.

## **8.24 Ido**

### **8.24.1 The commands 'find-alternate-file-other-window',**

'dired-other-window', 'dired-other-frame', and 'display-buffer-other-window' are now remapped to Ido equivalents if Ido mode is active.

## **8.25 Images**

### **8.25.1 Images are automatically scaled before displaying based on the**

'image-scaling-factor' variable (if Emacs supports scaling the images in question).

### **8.25.2 It's now possible to specify aspect-ratio preserving combinations**

of :width/:max-height and :height/:max-width keywords. In either case, the "max" keywords win. (Previously some combinations would, depending on the aspect ratio of the image, just be ignored and in other instances this would lead to the aspect ratio not being preserved.)

### **8.25.3 Images inserted with 'insert-image' and related functions get a**

keymap put into the text properties (or overlays) that span the image. This keymap binds keystrokes for manipulating size and rotation, as well as saving the image to a file. These commands are also available in 'image-mode'.

### **8.25.4 A new library for creating and manipulating SVG images has been**

added. See the "(elisp) SVG Images" section in the ELisp reference manual for details.

### **8.25.5 New setf-able function to access and set image parameters is**

provided: 'image-property'.

### **8.25.6 New commands 'image-scroll-left' and 'image-scroll-right'**

for 'image-mode' that complement 'image-scroll-up' and 'image-scroll-down': they have the same prefix arg behavior and stop at image boundaries.

## **8.26 Image-Dired**

### **8.26.1 Now provides a minor mode 'image-dired-minor-mode' which replaces**

the function 'image-dired-setup-dired-keybindings'.

### **8.26.2 Thumbnail generation is now asynchronous.**

The number of concurrent processes is limited by the variable 'image-dired-queue-active-limit'.

### **8.26.3 'image-dired-thumbnail-storage' has a new option 'standard-large'**

for generating 256x256 thumbnails according to the Thumbnail Managing Standard.

### **8.26.4 Inherits movement keys from 'image-mode' for viewing full images.**

This includes the usual char, line, and page movement commands.

### **8.26.5 All the -options types have been changed to argument lists**

instead of shell command strings. This change affects 'image-dired-cmd-create-thumbnail-options', 'image-dired-cmd-create-temp-image-options', 'image-dired-cmd-rotate-thumbnail-options', 'image-dired-cmd-rotate-original-options', 'image-dired-cmd-write-exif-data-options', 'image-dired-cmd-read-exif-data-options', and introduces 'image-dired-cmd-pngnq-options', 'image-dired-cmd-pngcrush-options', 'image-dired-cmd-create-standard-thumbnail-options'.



**8.26.6 Recognizes more tools by default, including pngnq-s9 and OptiPNG.**

**8.26.7 'find-file' and related commands now work on thumbnails and**

displayed images, providing a default argument of the original file name via an addition to 'file-name-at-point-functions'.

**8.27 The default 'Info-default-directory-list' no longer checks some obsolete**

directory suffixes (gnu, gnu/lib, gnu/lib/emacs, emacs, lib, lib/emacs) when searching for info directories.

**8.28 The commands that add ChangeLog entries now prefer a VCS root directory**

for the ChangeLog file, if none already exists. Customize 'change-log-directory-files' to nil for the old behavior.

**8.29 Support for non-string values of 'time-stamp-format' has been removed.**

**8.30 Message**

**8.30.1 'message-use-idna' now defaults to t (because Emacs comes with**

built-in IDNA support now).

**8.30.2 When sending HTML messages with embedded images, and you have**

exiftool installed, and you rotate images with EXIF data (i.e., JPEGs), the rotational information will be inserted into the outgoing image in the message. (The original image will not have its orientation affected.)

**8.30.3 The 'message-valid-fqdn-regexp' variable has been removed, since**

there are now top-level domains added all the time. Message will no longer warn about sending emails to top-level domains it hasn't heard about.

#### **8.30.4 'message-beginning-of-line' (bound to 'C-a') understands folded headers.**

In 'visual-line-mode' it will look for the true beginning of a header while in non-'visual-line-mode' it will move the point to the indented header's value.

### **8.31 Package**

#### **8.31.1 The new variable 'package-gnupghome-dir' has been added to control**

where the GnuPG home directory (used for signature verification) is located and whether GnuPG's option '-homedir' is used or not.

#### **8.31.2 Deleting a package no longer respects 'delete-by-moving-to-trash'.**

### **8.32 Python**

#### **8.32.1 The new variable 'python-indent-def-block-scale' has been added.**

It controls the depth of indentation of arguments inside multi-line function signatures.

### **8.33 Tramp**

#### **8.33.1 The method part of remote file names is mandatory now.**

A valid remote file name starts with `"/method:host:"` or `"/method:user@host:"`.

#### **8.33.2 The new pseudo method "-" is a marker for the default method.**

`"/-:"` is the shortest remote file name then.

#### **8.33.3 The command 'tramp-change-syntax' allows you to choose an**

alternative remote file name syntax.

**8.33.4** New connection method "sg", which supports editing files under a

different group ID.

**8.33.5** New connection method "doas" for OpenBSD hosts.

**8.33.6** New connection method "gdrive", which allows access to Google

Drive onsite repositories.

**8.33.7** Gateway methods in Tramp have been removed.

Instead, the Tramp manual documents how to configure ssh and PuTTY accordingly.

**8.33.8** Setting the "ENV" environment variable in

'tramp-remote-process-environment' enables reading of shell initialization files.

**8.33.9** Tramp is able now to send SIGINT to remote asynchronous processes.

**8.33.10** Variable 'tramp-completion-mode' is obsoleted.

**8.34** 'auto-revert-use-notify' is set back to t in 'global-auto-revert-mode'.

**8.35** JS mode

**8.35.1** JS mode now sets 'comment-multi-line' to t.

**8.35.2** New variable 'js-indent-align-list-continuation', when set to nil,

will not align continuations of bracketed lists, but will indent them by the fixed width 'js-indent-level'.

## **8.36 CSS mode**

### **8.36.1 Support for completing attribute values, at-rules, bang-rules,**

HTML tags, classes and IDs using the 'completion-at-point' command. Completion candidates for HTML classes and IDs are retrieved from open HTML mode buffers.

### **8.36.2 CSS mode now binds 'C-h S' to a function that will show**

information about a CSS construct (an at-rule, property, pseudo-class, pseudo-element, with the default being guessed from context). By default the information is looked up on the Mozilla Developer Network, but this can be customized using 'css-lookup-url-format'.

### **8.36.3 CSS colors are fontified using the color they represent as the**

background. For instance, #ff0000 would be fontified with a red background.

## **8.37 Emacs now supports character name escape sequences in character and**

string literals. The syntax variants 'character name' and 'U+code' are supported.

## **8.38 Prog mode has some support for multi-mode indentation.**

This allows better indentation support in modes that support multiple programming languages in the same buffer, like literate programming environments or ANTLR programs with embedded Python code.

A major mode can provide indentation context for a sub-mode. To support this, modes should use 'prog-first-column' instead of a literal zero and avoid calling 'widen' in their indentation functions. See the node "(elisp) Mode-Specific Indent" in the ELisp manual for more details.

## 8.39 ERC

### 8.39.1 New variable `'erc-default-port-tls'` used to connect to TLS IRC

servers.

## 8.40 URL

**8.40.1** The new function `'url-cookie-delete-cookie'` can be used to programmatically delete all cookies, or cookies from a specific domain.

**8.40.2** `'url-retrieve-synchronously'` now takes an optional timeout parameter.

**8.40.3** The URL package now supports HTTPS over proxies supporting CONNECT.

**8.40.4** `'url-user-agent'` now defaults to `'default'`, and the User-Agent

string is computed dynamically based on `'url-privacy-level'`.

## 8.41 VC and related modes

**8.41.1** `'vc-dir-mode'` now binds `'vc-log-outgoing'` to `'O'`; and has various

branch-related commands on a keymap bound to `'B'`.

**8.41.2** `'vc-region-history'` is now bound to `'C-x v h'`, replacing the older

`'vc-insert-headers'` binding.

**8.41.3** New user option `'vc-git-print-log-follow'` to follow renames in Git logs

for a single file.

## 8.42 CC mode

### 8.42.1 Opening a .h file will turn C or C++ mode depending on language used.

This is done with the help of the 'c-or-c++-mode' function, which analyzes buffer contents to infer whether it's a C or C++ source file.

### 8.43 New option 'cpp-message-min-time-interval' to allow user control

of progress messages in cpp.el.

### 8.44 New DNS mode command 'dns-mode-ipv6-to-nibbles' to convert IPv6 addresses

to a format suitable for reverse lookup zone files.

## 8.45 Ispell

### 8.45.1 Enchant is now supported as a spell-checker.

Enchant is a meta-spell-checker that uses providers such as Hunspell to do the actual checking. With it, users can use spell-checkers not directly supported by Emacs, such as Voikko, Hspell and AppleSpell, more easily share personal word-lists with other programs, and configure different spelling-checkers for different languages. (Version 2.1.0 or later of Enchant is required.)

## 8.46 Flymake

### 8.46.1 Flymake has been completely redesigned

Flymake now annotates arbitrary buffer regions, not just lines. It supports arbitrary diagnostic types, not just errors and warnings (see variable 'flymake-diagnostic-types-alist').

It also supports multiple simultaneous backends, meaning that you can check your buffer from different perspectives (see variable 'flymake-diagnostic-functions'). Backends for Emacs Lisp mode are provided.

The old Flymake behavior is preserved in the so-called "legacy backend", which has been updated to benefit from the new UI features.

## 8.47 Term

### 8.47.1 term-char-mode 模式下的 buffer 默认为只读模式

这个 buffer 默认设置为只读模式主要防止其他除了程序过滤器之外的任何对其进行修改的行为；并且光标的移动也在有所限制，主要用为了保持每次命令执行后光标都处理“当前”位置。这也是为了在交互式命令中使得 emacs 更加方便获取其状态。

可以通过 **term-char-mode-buffer-read-only** 来控制 buffer 是否为只读，Emacs 26 以后这个值默认设置不为 nil，如果想关闭只读，设置其值为 nil 就行。同理可以通过另一个变量，即：**term-char-mode-point-at-process-mark** 来控制光标是否可上下移动，其默认值不是 nil。如果想让光标能上下移动，设置这个值为 nil。

## 8.48 Xref

### 8.48.1 When an xref buffer is needed, 'TAB' quits and jumps to an xref.

A new command 'xref-quit-and-goto-xref', bound to 'TAB' in **xref** buffers, quits the window before jumping to the destination. In many situations, the intended window configuration is restored, just as if the **xref** buffer hadn't been necessary in the first place.

## 9 Emacs 26.1 新的模式和包

### 9.1 新的 Elisp 数据结构库 radix-tree

### 9.2 New library 'xdg' with utilities for some XDG standards and specs.

### 9.3 HTML

#### 9.3.1 A new submode of 'html-mode', 'mhtml-mode', is now the default

mode for \*.html files. This mode handles indentation, fontification, and commenting for embedded JavaScript and CSS.

### 9.4 New mode 'conf-toml-mode' is a sub-mode of 'conf-mode', specialized

for editing TOML files.

**9.5 New mode 'conf-desktop-mode' is a sub-mode of 'conf-unix-mode',**

specialized for editing freedesktop.org desktop entries.

**9.6 New minor mode 'pixel-scroll-mode' provides smooth pixel-level scrolling.**

**9.7 New major mode 'less-css-mode' (a minor variant of 'css-mode') for**

editing Less files.

**9.8 New package 'auth-source-pass' integrates 'auth-source' with the**

password manager password-store (<http://passwordstore.org>).

## **10 Emacs 26.1 中不兼容的 Lisp 部分说明**

**10.1 'password-data' is now a hash-table so that 'password-read' can use**

any object for the 'key' argument.

**10.2 Command 'dired-mark-extension' now automatically prepends a '.' to the**

extension when not present. The new command 'dired-mark-suffix' behaves similarly but it doesn't prepend a '.'.

**10.3 Certain cond/pcase/cl-case forms are now compiled using a faster jump**

table implementation. This uses a new bytecode op 'switch', which isn't compatible with previous Emacs versions. This functionality can be disabled by setting 'byte-compile-cond-use-jump-table' to nil.



#### **10.4 If 'comment-auto-fill-only-comments' is non-nil, 'auto-fill-function'**

is now called only if either no comment syntax is defined for the current buffer or the self-insertion takes place within a comment.

#### **10.5 The alist 'ucs-names' is now a hash table.**

#### **10.6 'if-let' and 'when-let' now support binding lists as defined by the**

SRFI-2 (Scheme Request for Implementation 2).

#### **10.7 'C-up', 'C-down', 'C-left' and 'C-right' are now defined in term**

mode to send the same escape sequences that xterm does. This makes things like 'forward-word' in readline work.

#### **10.8 Customizable variable 'query-replace-from-to-separator'**

now doesn't propertize the string value of the separator. Instead, text properties are added by 'query-replace-read-from'. Additionally, the new nil value restores pre-24.5 behavior of not providing replacement pairs via the history.

#### **10.9 Some obsolete functions, variables, and faces have been removed:**

##### **10.9.1 'make-variable-frame-local'. Variables cannot be frame-local any more.**

##### **10.9.2 From subr.el: 'window-dot', 'set-window-dot', 'read-input', 'show-buffer', 'eval-current-buffer', 'string-to-int'.**

##### **10.9.3 'incomplete-prospects-length'.**

##### **10.9.4 All the default-FOO variables that hold the default value of the**

FOO variable. Use 'default-value' and 'setq-default' to access and change FOO, respectively. The exhaustive list of removed variables is: 'default-mode-line-format', 'default-header-line-format', 'default-line-spacing', 'default-abbrev-mode', 'default-ctl-arrow', 'default-truncate-lines', 'default-left-margin',

'default-tab-width', 'default-case-fold-search', 'default-left-margin-width', 'default-right-margin-width', 'default-left-fringe-width', 'default-right-fringe-width', 'default-fringes-outside-margins', 'default-scroll-bar-width', 'default-vertical-scroll-bar', 'default-indicate-empty-lines', 'default-indicate-buffer-boundaries', 'default-fringe-indicator-alist', 'default-fringe-cursor-alist', 'default-scroll-up-aggressively', 'default-scroll-down-aggressively', 'default-fill-column', 'default-cursor-type', 'default-cursor-in-non-selected-windows', 'default-buffer-file-coding-system', 'default-major-mode', and 'default-enable-multibyte-characters'.

**10.9.5 Many variables obsoleted in 22.1 referring to face symbols.**

**10.10 The variable 'text-quoting-style' is now a customizable option. It**

controls whether to and how to translate ASCII quotes in messages and help output. Its possible values and their semantics remain unchanged from Emacs 25. In particular, when this variable's value is 'grave', all quotes in formats are output as-is.

**10.11 Functions like 'check-declare-file' and 'check-declare-directory'**

now generate less chatter and more-compact diagnostics. The auxiliary function 'check-declare-errmsg' has been removed.

**10.12 The regular expression character class '[:blank:]' now matches**

Unicode horizontal whitespace as defined in the Unicode Technical Standard #18. If you only want to match space and tab, use '[<sup>^</sup>]' instead.

**10.13 'min' and 'max' no longer round their results.**

Formerly, they returned a floating-point value if any argument was floating-point, which was sometimes numerically incorrect. For example, on a 64-bit host (max 1e16 10000000000000001) now returns its second argument instead of its first.

#### **10.14 The variable 'old-style-backquotes' has been made internal and**

renamed to 'read-old-style-backquotes'. No user code should use this variable.

#### **10.15 'default-file-name-coding-system' now defaults to a coding system**

that does not process CRLF. For example, it defaults to 'utf-8-unix' instead of to 'utf-8'. Before this change, Emacs would sometimes mishandle file names containing these control characters.

#### **10.16 'file-attributes', 'file-symlink-p' and 'make-symbolic-link' no**

longer quietly mutate the target of a local symbolic link, so that Emacs can access and copy them reliably regardless of their contents. The following changes are involved.

##### **10.16.1 'file-attributes' and 'file-symlink-p' no longer prepend "/" to**

symbolic links whose targets begin with "/" and contain ":". For example, if a symbolic link "x" has a target "y:z:", '(file-symlink-p "x")' now returns *"/y:z:" rather than ":/y:z:"*.

##### **10.16.2 'make-symbolic-link' no longer looks for file name handlers of**

target when creating a symbolic link. For example, '(make-symbolic-link *"/y:z:" "x"*)' now creates a symbolic link to *"/y:z:"* instead of failing.

##### **10.16.3 'make-symbolic-link' removes the remote part of a link target if**

target and newname have the same remote part. For example, '(make-symbolic-link *"/x:y:a" "/x:y:b"*)' creates a link with the literal string *"a"*; and '(make-symbolic-link *"/x:y:a" "/x:z:b"*)' creates a link with the literal string *"/x:y:a"* instead of failing.

#### **10.16.4 'make-symbolic-link' now expands a link target with leading "~"**

only when the optional third arg is an integer, as when invoked interactively. For example, '(make-symbolic-link "~y" "x")' now creates a link with target the literal string "~y"; to get the old behavior, use '(make-symbolic-link (expand-file-name "~y") "x")'. To avoid this expansion in interactive use, you can now prefix the link target with ":". *For example, '(make-symbolic-link ":~y" "x" 1)' now creates a link to literal "~y".*

#### **10.17 'file-truename' returns a quoted file name if the target of a**

symbolic link has remote file name syntax.

#### **10.18 Module functions are now implemented slightly differently; in**

particular, the function 'internal-module-call' has been removed. Code that depends on undocumented internals of the module system might break.

#### **10.19 The argument LOCKNAME of 'write-region' is propagated to file name**

handlers now.

#### **10.20 When built against recent versions of GTK+, Emacs always uses**

gtk<sub>windowmove</sub> for moving frames and ignores the value of the variable 'x-gtk-use-window-move'. The variable is now obsolete.

#### **10.21 Several functions that create or rename files now treat their**

destination argument specially only when it is a directory name, i.e., when it ends in '/' on GNU and other POSIX-like systems. When the destination argument D of one of these functions is an existing directory and the intent is to act on an entry in that directory, D should now be a directory name. For example, (rename-file "e" "f/") renames to 'f/e'. Although this formerly happened sometimes even when D was not a directory name, as in (rename-file "e" "f") where 'f' happened to be a directory, the old behavior

often contradicted the documentation and had inherent races that led to security holes. A call like `(rename-file C D)` that used the old, undocumented behavior can be written as `(rename-file C (file-name-as-directory D))`, a formulation portable to both older and newer versions of Emacs. Affected functions include `'add-name-to-file'`, `'copy-directory'`, `'copy-file'`, `'format-write-file'`, `'gnus-copy-file'`, `'make-symbolic-link'`, `'rename-file'`, `'thumbs-rename-images'`, and `'write-file'`.

### **10.22 The list returned by `'overlays-at'` is now in decreasing priority order.**

The documentation of this function always said the order should be that of decreasing priority, if the 2nd argument of the function is non-nil, but the code returned the list in the increasing order of priority instead. Now the code does what the documentation says it should do.

### **10.23 `'format'` now avoids allocating a new string in more cases.**

`'format'` was previously documented to return a newly-allocated string, but this documentation was not correct, as `(eq x (format x))` returned t when x was the empty string. `'format'` is no longer documented to return a newly-allocated string, and the implementation now takes advantage of the doc change to avoid making copies of strings in common cases like `(format "foo")` and `(format "%s" "foo")`.

### **10.24 The function `'eldoc-message'` now accepts a single argument.**

Programs that called it with multiple arguments before should pass them through `'format'` first. Even that is discouraged: for ElDoc support, you should set `'eldoc-documentation-function'` instead of calling `'eldoc-message'` directly.

### **10.25 Using `'&rest'` or `'&optional'` incorrectly is now an error.**

For example giving `'&optional'` without a following variable, or passing `'&optional'` multiple times:

```
(defun foo (&optional &rest x)) (defun bar (&optional &optional x))
```

Previously, Emacs would just ignore the extra keyword, or give incorrect results in certain cases.

### **10.26 The pinentry.el library has been removed.**

That package (and the corresponding change in GnuPG and pinentry) was intended to provide a way to input passphrase through Emacs with GnuPG 2.0. However, the change to support that was only implemented in GnuPG  $\geq 2.1$  and didn't get backported to GnuPG 2.0. And with GnuPG 2.1 and later, pinentry.el is not needed at all. So the library was useless, and we removed it. GnuPG 2.0 is no longer supported by the upstream project.

To adapt to the change, you may need to set 'epa-pinentry-mode' to the symbol 'loopback'. Alternatively, leave 'epa-pinentry-mode' at its default value of nil, and remove the 'allow-emacs-pinentry' setting from your 'gpg-agent.conf' configuration file, usually found in the '~/.gnupg' directory.

Note that previously, it was said that passphrase input through minibuffer would be much less secure than other graphical pinentry programs. However, these days the difference is insignificant: the 'read-password' function sufficiently protects input from leakage to message logs. Emacs still doesn't use secure memory to protect passphrases, but it was also removed from other pinentry programs as the attack is unrealistic on modern computer systems which don't utilize swap memory usually.

## **11 Emacs 26.1 中 Lisp 的变化**

### **11.1 The function 'assoc' now takes an optional third argument TESTFN.**

This argument, when non-nil, is used for comparison instead of 'equal'.

### **11.2 New optional argument TESTFN in 'alist-get', 'map-elt' and 'map-put'.**

If non-nil, the argument specifies a function to use for comparison, instead of, respectively, 'assq' and 'eql'.

### **11.3 New function 'seq-set-equal-p' to check if SEQUENCE1 and SEQUENCE2**

contain the same elements, regardless of the order.

#### **11.4 The new function 'mapbacktrace' applies a function to all frames of**

the current stack trace.

#### **11.5 The new function 'file-name-case-insensitive-p' tests whether a**

given file is on a case-insensitive filesystem.

#### **11.6 Several accessors for the value returned by 'file-attributes'**

have been added. They are: 'file-attribute-type', 'file-attribute-link-number', 'file-attribute-user-id', 'file-attribute-group-id', 'file-attribute-access-time', 'file-attribute-modification-time', 'file-attribute-status-change-time', 'file-attribute-size', 'file-attribute-modes', 'file-attribute-inode-number', 'file-attribute-device-number' and 'file-attribute-collect'.

#### **11.7 The new function 'buffer-hash' computes a fast, non-consing hash of**

a buffer's contents.

#### **11.8 'interrupt-process' now consults the list 'interrupt-process-functions',**

to determine which function has to be called in order to deliver the SIGINT signal. This allows Tramp to send the SIGINT signal to remote asynchronous processes. The hitherto existing implementation has been moved to 'internal-default-interrupt-process'.

#### **11.9 The new function 'read-multiple-choice' prompts for multiple-choice**

questions, with a handy way to display help texts.

#### **11.10 'comment-indent-function' values may now return a cons to specify a**

range of indentation.

**11.11 New optional argument TEXT in 'make-temp-file'.**

**11.12 New function 'define-symbol-prop'.**

**11.13 New function 'secure-hash-algorithms' to list the algorithms that**

'secure-hash' supports. See the node "(elisp) Checksum/Hash" in the ELisp manual for details.

**11.14 Emacs now exposes the GnuTLS cryptographic API with the functions**

'gnutls-macs' and 'gnutls-hash-mac'; 'gnutls-digests' and 'gnutls-hash-digest'; 'gnutls-ciphers' and 'gnutls-symmetric-encrypt' and 'gnutls-symmetric-decrypt'. See the node "(elisp) GnuTLS Cryptography" in the ELisp manual for details.

**11.15 The function 'gnutls-available-p' now returns a list of capabilities**

supported by the GnuTLS library used by Emacs.

**11.16 Emacs now supports records for user-defined types, via the new**

functions 'make-record', 'record', and 'recordp'. Records are now used internally to represent cl-defstruct and defclass instances, for example.

If your program defines new record types, you should use package-naming conventions for naming those types. This is so any potential conflicts with other types are avoided.

**11.17 'save-some-buffers' now uses 'save-some-buffers-default-predicate'**

to decide which buffers to ask about, if the PRED argument is nil. The default value of 'save-some-buffers-default-predicate' is nil, which means ask about all file-visiting buffers.



**11.18** `string-(to|as|make)-(uni|multi)byte` are now declared obsolete.

**11.19** New variable `'while-no-input-ignore-events'` which allow

setting which special events `'while-no-input'` should ignore. It is a list of symbols.

**11.20** New function `'undo-amalgamate-change-group'` to get rid of

undo-boundaries between two states.

**11.21** New var `'definition-prefixes'` is a hash table mapping prefixes to

the files where corresponding definitions can be found. This can be used to fetch definitions that are not yet loaded, for example for `'C-h f'`.

**11.22** New var `'syntax-ppss-table'` to control the syntax-table used in

`'syntax-ppss'`.

**11.23** `'define-derived-mode'` can now specify an `:after-hook` form, which

gets evaluated after the new mode's hook has run. This can be used to incorporate configuration changes made in the mode hook into the mode's setup.

**11.24** Autoload files are now generated without timestamps.

Set `'autoload-timestamps'` to a non-nil value to get timestamps in autoload files.

**11.25** `'gnutls-boot'` now takes a parameter `':complete-negotiation'` that

says that negotiation should complete even on non-blocking sockets.

**11.26 There is now a new variable 'flyspell-sort-corrections-function'**

that allows changing the way corrections are sorted.

**11.27 The new command 'fortune-message' has been added, which displays**

fortunes in the echo area.

**11.28 New function 'func-arity' returns information about the argument list**

of an arbitrary function. This generalizes 'subr-arity' for functions that are not built-in primitives. We recommend using this new function instead of 'subr-arity'.

**11.29 New function 'region-bounds' can be used in the interactive spec**

to provide region boundaries (for rectangular regions more than one) to an interactively callable function as a single argument instead of two separate arguments 'region-beginning' and 'region-end'.

**11.30 'parse-partial-sexp' state has a new element. Element 10 is**

non-nil when the last character scanned might be the first character of a two character construct, i.e., a comment delimiter or escaped character. Its value is the syntax of that last character.

**11.31 'parse-partial-sexp's state, element 9, has now been confirmed as**

permanent and documented, and may be used by Lisp programs. Its value is a list of currently open parenthesis positions, starting with the outermost parenthesis.

**11.32 'read-color' will now display the color names using the color itself**

as the background color.

### **11.33 The function 'redirect-debugging-output' now works on platforms**

other than GNU/Linux.

### **11.34 The new function 'string-version-lessp' compares strings by**

interpreting consecutive runs of numerical characters as numbers, and compares their numerical values. According to this predicate, "foo2.png" is smaller than "foo12.png".

### **11.35 Numeric comparisons and 'logb' no longer return incorrect answers**

due to internal rounding errors. For example, '(< most-positive-fixnum (+ 1.0 most-positive-fixnum))' now correctly returns t on 64-bit hosts.

### **11.36 The functions 'ffloor', 'fceil', 'ftruncate' and 'fround' now**

accept only floating-point arguments, as per their documentation. Formerly, they quietly accepted integer arguments and sometimes returned nonsensical answers, e.g., '(< N (ffloor N))' could return t.

### **11.37 On hosts like GNU/Linux x86-64 where a 'long double' fraction**

contains at least `EMACS_INTWIDTH - 3` bits, 'format' no longer returns incorrect answers due to internal rounding errors when formatting Emacs integers with '%e', '%f', or '%g' conversions. For example, on these hosts '(eq N (string-to-number (format "%.0f" N)))' now returns t for all Emacs integers N.

### **11.38 Calls that accept floating-point integers (for use on hosts with**

limited integer range) now signal an error if arguments are not integral. For example '(decode-char 'ascii 0.5)' now signals an error.

**11.39 Functions 'string-trim-left', 'string-trim-right' and 'string-trim'**

now accept optional arguments which specify the regexp of a substring to trim.

**11.40 The new function 'char-from-name' converts a Unicode name string**

to the corresponding character code.

**11.41 New functions 'sxhash-eq' and 'sxhash-eql' return hash codes of a**

Lisp object suitable for use with 'eq' and 'eql' correspondingly. If two objects are 'eq' ('eql'), then the result of 'sxhash-eq' ('sxhash-eql') on them will be the same.

**11.42 Function 'sxhash' has been renamed to 'sxhash-equal' for**

consistency with the new functions. For compatibility, 'sxhash' remains as an alias to 'sxhash-equal'.

**11.43 'make-hash-table' now defaults to a rehash threshold of 0.8125**

instead of 0.8, to avoid rounding glitches.

**11.44 New function 'add-variable-watcher' can be used to call a function**

when a symbol's value is changed. This is used to implement the new debugger command 'debug-on-variable-change'.

**11.45 New variable 'print-escape-control-characters' causes 'prin1' and**

'print' to output control characters as backslash sequences.

**11.46 Time conversion functions that accept a time zone rule argument now**

allow it to be OFFSET or a list (OFFSET ABBR), where the integer OFFSET is a count of seconds east of Universal Time, and the string ABBR is a time zone abbreviation. The affected functions are 'current-time-string', 'current-time-zone', 'decode-time', 'format-time-string', and 'set-time-zone-rule'.

**11.47 'format-time-string' now formats '%q' to the calendar quarter.**

**11.48 新的内置函数 mapcan**

It avoids unnecessary consing (and garbage collection).

**11.49 'car' and 'cdr' compositions 'cXXXr' and 'cXXXXr' are now part of Elisp.**

**11.50 'gensym' is now part of Elisp.**

**11.51 Low-level list functions like 'length' and 'member' now do a better**

job of signaling list cycles instead of looping indefinitely.

**11.52 The new functions 'make-nearby-temp-file' and 'temporary-file-directory'**

can be used for creation of temporary files on remote or mounted directories.

**11.53 On GNU platforms when operating on a local file, 'file-attributes'**

no longer suffers from a race when called while another process is altering the filesystem. On non-GNU platforms 'file-attributes' attempts to detect the race, and returns nil if it does so.

**11.54 The new function 'file-local-name' can be used to specify arguments**

of remote processes.

### 11.55 The new functions 'file-name-quote', 'file-name-unquote' and

'file-name-quoted-p' can be used to quote / unquote file names with the prefix `"/:"`.

### 11.56 The new error 'file-missing', a subcategory of 'file-error', is now

signaled instead of 'file-error' if a file operation acts on a file that does not exist.

### 11.57 The function 'delete-directory' no longer signals an error when

operating recursively and when some other process deletes the directory or its files before 'delete-directory' gets to them.

### 11.58 New error type 'user-search-failed' like 'search-failed' but

avoids debugger like 'user-error'.

### 11.59 函数 line-number-at-pos 的变化

函数 line-number-at-pos 支持传递第二个可选参数 absolute。如果这个参数为 nil, 默认行为, this function keeps on returning the line number taking potential narrowing into account. If this parameter is non-nil, the function ignores narrowing and returns the absolute line number.

### 11.60 函数 color-distance 的调整

函数 color-distance 在新版本支持第二个可选参数 metric。当这个参数不为 nil 时, 它将接收两个参数 (两个颜色值) 返回一个距离值。

### 11.61 Frame 和 Window 操作

#### 11.61.1 调整 frame 大小方式的改变

请使用 window-size-change-functions 代替老的 window-configuration-change-hook。

### 11.61.2 Frame 大小是否被调整

判断 Frame 是否被调整可使用新函数 `frame-size-changed-p`。这里的大小是否被调整过是从上一次调用 `window-size-change-functions` 算起。

### 11.61.3 函数 `frame-geometry` 也会返回 frame 的外边界宽度

#### 11.61.4 新增部分 frame 相关参数及老参数一些语义变化

1. `'z-group'` 将 frame 置于其他之上或之下
2. `'min-width'` 和 `'min-height'` 用于指定 frame 的绝对最小范围
3. `'parent-frame'` 使得一个 frame 成为另一个 frame 的子 frame。详情请参见 Emacs 手册的 Emacs 子 frames 部分
4. `'delete-before'` 在删除一个 frame 前触发删除另一个
5. `'mouse-wheel-frame'` 指定另一个 frame 的窗口可滚动
6. `'no-other-frame'` 新增 `'next-frame'` 和 `'previous-frame'` 跳过当前 frame
7. `'skip-taskbar'` 从任务条 (taskbar) 中删除 frame 的图标, 同时, 可通过 `'Alt-<TAB>'` 跳过这个 frame
8. `'no-focus-on-map'` 避免一个规划过的 frame 获得输入选中
9. `'no-accept-focus'` 表示 frame 不希望通过鼠标获得输入选中
10. `'undecorated'` 从 frame 中移除窗口管理样式
11. `'override-redirect'` 让窗口管理忽视当前 frame
12. `'width'` and `'height'` 支持按比例指定和按像素值
13. `'left'` and `'top'` 支持按比例指定
14. `'keep-ratio'` preserves size and position of child frames when their parent frame is resized.
15. `'no-special-glyphs'` suppresses display of truncation and continuation glyphs in a frame.
16. `'auto-hide-function'` and `'minibuffer-exit'` handle auto hiding of frames and exiting from minibuffer individually.

17. 'fit-frame-to-buffer-margins' and 'fit-frame-to-buffer-sizes' handle fitting a frame to its buffer individually.
18. 'drag-internal-border', 'drag-with-header-line', 'drag-with-mode-line', 'snap-width', 'top-visible' and 'bottom-visible' allow dragging and resizing frames with the mouse.
19. 'minibuffer' is now set to the default minibuffer window when initially specified as nil and is not reset to nil when initially specifying a minibuffer window.

**11.61.5 新增函数 frame-list-z-order 返回按 z(栈) 顺序的 frame 列表**

**11.61.6 函数 'x-focus-frame' 不激活它的 frame 变成可选项**

**11.61.7 变量 focus-follows-mouse 增加第三个有意义的值 auto-raise**

这个值用于当鼠标进入 frame 时, 标明窗口管理自动聚焦这个 frame。

**11.61.8 新增函数 frame-restack, 用于调整 frame 的层级关系**

**11.61.9 新增 internal-border 用于指定 frame 的外部边界背景**

**11.61.10 select-window 函数 NORECORD 参数增加 mark-for-redisplay 选项**

这个选项类似其他不是 nil 的值, 但它标记窗口 ( WINDOW ) 重新显示

**11.61.11 正式支持对边窗 (side windows)**

显示操作函数 display-buffer-in-side-window 可将 buffer 显示在边空上。更从详情请参考 ELisp 手册里的边窗口部分。

**11.61.12 支持原子窗口**

更从详情请参考 ELisp 手册里的原子窗口部分

**11.61.13 新增 display-buffer 列表项 window-parameters**

分配给要展示 buffer 的窗口参数



#### 11.61.14 新增函数 `display-buffer-reuse-mode-window`

这个函数是一个交互函数，适用在 `display-buffer-alist`。例如，当打开一个帮助手册，为了避免再次创建一个已经存在的窗口，可用这个机制完成。

```
(add-to-list 'display-buffer-alist
  '("\\`\\*Man .*\\*\\`" .
    (display-buffer-reuse-mode-window
      (inhibit-same-window . nil)
      (mode . Man-mode))))
```

#### 11.61.15 新窗口参数 `no-delete-other-windows`

防止窗口被 `delete-other-windows` 命令删除掉

#### 11.61.16 新窗口参数 `mode-line-format` 和 `'header-line-format`

这两个参数允许 `buffer` 本地 (`buffer-local`) 修改进行覆盖。

#### 11.61.17 新增命令 `window-swap-states`

这个命令用于交换两个打开的 `windows` 的状态 (选中和被选中)，这个方法常用于当前只有两个窗口时，交换两个窗口的内容。

#### 11.61.18 新增 `window-pixel-width-before-size-change` 和 `window-pixel-height-before-size-change` 函数

用于当 `window-size-change-functions` 运行里，检测哪个窗口大小发生了变化

#### 11.61.19 新增加函数 `window-lines-pixel-dimensions`

这个函数返回一个窗口文本行的像素大小

#### 11.61.20 新增函数 `'window-largest-empty-rectangle'`

这个函数返回在窗口里没有文本的最大矩形区域大小

#### 11.61.21 函数 `'mouse-autoselect-window'` 语义微调

详情参考 `Elisp` 手册里的 `"(elisp) Mouse Window Auto-selection"` 函数。

**11.61.22** `'select-frame-by-name'` 在当前的显示器里无法找到一个匹配的 frame, 可返回一个在其他显示器上的 frame

**11.62** `'tcl-auto-fill-mode'` 已经声明废弃

这个函数的功能可通过设置 `comment-auto-fill-only-comments` 来实现。

**11.63** 新增 `pcase` 模式 `'rx'` 用于匹配 `rx` 风格的正则表达式

详情请参考 `'rx-pcase-macroexpander'` 函数文档。

**11.64** 新增区域二次选择函数

新增加函数 `'secondary-selection-to-region'` 和 `'secondary-selection-from-region'`, 满足用户再次设置区间的开始和结束。

**11.65** 新增函数 `'lgstring-remove-glyph'`

这个函数用于修改底层布局引擎 (如 `m17n-flt`, `uniscribe`) 返回的 `gstring`。

## 12 Emacs 26.1 在一些特殊模式和包中的变化

**12.1** 在 Windows7 及以上系统对快捷键的捕获性能更好

新的键盘钩子代码 (hooking code) 更加准确捕获系统快捷键如 `'Win-*` 和 `'Alt-TAB'`, 通过这种方式, Emacs 比系统更早地获取按键事件。这使得 `'w32-register-hot-key'` 函数功能违背了所有 Windows7 开始的原意功能。Windows NT 及之后版本可以注册任务快捷键的组合。(在 Windows 9X, 之前的限制, 在 Emacs 的手册里已经说明了依然需要申请)。

**12.2** `'convert-standard-filename'` 函数的变化

在 MS-Windows 系统中 `'convert-standard-filename'` 函数不再将斜线 (`/`) 替换成反斜线 (`\`)。老版本在 *MS-Windows* 系统中这个函数将文件名里的斜线 (`/`) 强制转成反斜线 (`\`)。因为不再这样做, 如果你 Lisp 代码里使用了 **`convert-standard-filename`** 这个函数去做这个变化, 你需要自己手工处理一下这块的代码。如按照如下方式:

```
(let ((start 0))
  (while (string-match "/" file-name start)
    (aset file-name (match-beginning 0) "\\")
    (setq start (match-end 0))))
```

### 12.3 MS-Windows 平台下的 GUI 会话像 Posix 平台一样将被当作 SIGINT

Ctrl-C (SIGINT) 信号在 MS-Windows 平台 GUI 的效果与 Posix 平台一样：Emacs 保存会话然后退出。譬如，如果你在 Windows shell 里启动 emacs.exe 程序，然后在 shell 窗口里按下 Ctrl-C，也会产生同样效果。

### 12.4 Windows XP 及以后系统'signal-process' 支持 SIGTRAP

在 Windows 系统下对'kill'的仿真映射到 SIGTRAP 信号去调用'DebugBreakProcess'接口。这会导致检索程序终止执行，然后把控制权交给调试者(debugger)。如果没有调试者绑定到搜索程序，这个调用将被忽略。这跟 POSIX 系统的默认行为形成对比，POSIX 系统是终止检索程序的执行（终止前会做一次 core dump）。

### 12.5 macOS 系统里的一些小优化

1. 修复在 macOS 系统里'set-mouse-position'和'set-mouse-absolute-pixel-position'命令不生效问题；
2. 在 macOS 系统，从命令行中也可打开 Emacs GUI 程序；
3. macOS 10.9+ 'ns-appearance'和'ns-transparent-titlebar'改变 frame 的显示；
4. macOS 10.8+ 系统里使用'ns-use-thin-smoothing'开启瘦字段更加柔和；
5. Darwin 系统'process-attributes'返回更多信息；
6. macOS 10.7+ 鼠标方向键和触摸板的滚动效果表现更加与原生系统相同，新增变量'ns-mwheel-line-height'、'ns-use-mwheel-acceleration'和'ns-use-mwheel-momentum'用来定制化这些行为。

## 13 GNU Emacs 协议文件说明原文

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