OpenType math font Fira

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Abstract

The math font FIRA is derived from the Fira Sans and Fira Go sans serif. There are several math versions available (`https://github.com/Stone-Zeng/FiraMath/`) but only the regular version has from todays update all symbols.

1 Usage

```
\usepackage[<options>]{firamath-otf}
```

Optional arguments are

`fakebold` Use faked bold symbols

`usefilenames` Use filenames for the fonts instead of the symbolic font names

The package itself loads by default

```
\RequirePackage{ifxetex,ifluatex,xkeyval,textcomp}
\RequirePackage{unicode-math}
```

2 The default regular weight

2.1 Version normal

$$
\begin{aligned}
\frac{\partial\varrho}{\partial t} + \mathrm{div}(\varrho\vec{v}) = 0 \\
\varrho\frac{\partial\vec{v}}{\partial t} + (\varrho\vec{v}\cdot\nabla)\vec{v} = \vec{f}_0 + \mathrm{div}\mathbf{T} = \vec{f}_0 - \mathrm{grad}p + \mathrm{div}\mathbf{T}' \\
\varrho T\frac{\mathrm{d}s}{\mathrm{d}t} = \varrho\frac{\mathrm{d}e}{\mathrm{d}t} - \frac{p}{\varrho}\frac{\mathrm{d}\varrho}{\mathrm{d}t} = -\mathrm{div}\vec{q} + \mathbf{T}' : \mathbf{D}
\end{aligned}
\tag{1}
$$

$$
\frac{\partial}{\partial t}\iiint \varrho\,\mathrm{d}^3V + \oiint \varrho(\vec{v}\cdot\vec{v}ecn)\,\mathrm{d}^2A = 0 \tag{2}
$$

$$
\frac{\partial}{\partial t}\iiint \varrho\vec{v}\,\mathrm{d}^3V + \oiint \varrho\vec{v}(\vec{v}\cdot\vec{n}\,)\,\mathrm{d}^2A = \iiint f_0\,\mathrm{d}^3V + \oiint \vec{n}\cdot\mathbf{T}\,\mathrm{d}^2A \tag{3}
$$

$$
\begin{aligned}
\frac{\partial}{\partial t}\iiint\left(\frac{1}{2}v^2 + e\right)\varrho\,\mathrm{d}^3V + \oiint\left(\frac{1}{2}v^2 + e\right)\varrho\left(\vec{v}\cdot\vec{n}\,\right)\mathrm{d}^2A = \\
-\oiint\left(\vec{q}\cdot\vec{v}ecn\right)\mathrm{d}^2A + \iiint\left(\vec{v}\cdot\vec{f}_0\right)\mathrm{d}^3V + \oiint\left(\vec{v}\cdot\vec{n}\;\mathbf{T}\right)\mathrm{d}^2A.
\end{aligned}
\tag{4}
$$

2.2 Version bold

The bold characters are created with the optional argument `fakebold` which loads the package `xfakebold` which writes some information into the created PDF to get bold characters. For more informations see the documentation of `xfakebold`.

$$
\boldsymbol{\frac{\partial}{\partial t}\iiint \varrho\,\mathrm{d}^3V + \oiint \varrho(\vec{v}\cdot\vec{v}ecn)\,\mathrm{d}^2A = 0} \tag{5}
$$

$$
\boldsymbol{\frac{\partial}{\partial t}\iiint \varrho\vec{v}\,\mathrm{d}^3V + \oiint \varrho\vec{v}(\vec{v}\cdot\vec{n}\,)\,\mathrm{d}^2A = \iiint f_0\,\mathrm{d}^3V + \oiint \vec{n}\cdot\mathrm{T}\,\mathrm{d}^2A} \tag{6}
$$

$$
\boldsymbol{
\begin{aligned}
\frac{\partial}{\partial t}\iiint\left(\frac{1}{2}v^2 + e\right)\varrho\,\mathrm{d}^3V + \oiint\left(\frac{1}{2}v^2 + e\right)\varrho\left(\vec{v}\cdot\vec{n}\,\right)\mathrm{d}^2A = \\
-\oiint\left(\vec{q}\cdot\vec{v}ecn\right)\mathrm{d}^2A + \iiint\left(\vec{v}\cdot\vec{f}_0\right)\mathrm{d}^3V + \oiint\left(\vec{v}\cdot\vec{n}\;\mathrm{T}\right)\mathrm{d}^2A.
\end{aligned}}
\tag{7}
$$

3 Examples

3.1 Digits

- Digits:

$$0123456789$$

- Proportional digits:

$$0123456789$$

- Bold digits (`\symbf`):

$$\symbf{0123456789}$$

- Bold proportional digits (`\symbf`):

$$\symbf{0123456789}$$

3.2 Alphabets

- Latin letters (mathnormal):

$$ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklmnopqrstuvwxyz$$

- Latin upright letters (`\symup`):

$$\symup{ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklmnopqrstuvwxyz}$$

- Latin typewriter letters (`\symtt`):

$$\symtt{ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklmnopqrstuvwxyz}$$

- Latin bold letters (`\symbf`):

$$\symbf{ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklmnopqrstuvwxyz}$$

- Latin bold upright letters (`\symbfup`):

$$\symbfup{ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklmnopqrstuvwxyz}$$

- Latin blackboard letters (`\symbb`):

$$\symbb{ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklmnopqrstuvwxyz}$$

- Greek letters:

$$\mathit{A}\mathit{B}\Gamma\Delta\mathit{E}\mathit{Z}\mathit{H}\Theta\vartheta\mathit{I}\mathit{K}\Lambda\mathit{M}\mathit{N}\Xi\mathit{O}\Pi\mathit{P}\Sigma\mathit{T}\Upsilon\Phi\mathit{X}\Psi\Omega\alpha\beta\gamma\delta\epsilon\varepsilon\zeta\eta\theta\vartheta\iota\kappa\varkappa\lambda\mu\nu\xi o\pi\rho\varrho\sigma\varsigma\tau\upsilon\phi\varphi\chi\psi\omega$$

- Greek upright letters (\symup):

  ΑΒΓΔΕΖΗΘϴΙΚΛΜΝΞΟΠΡΣΤΥΦΧΨΩαβγδεϵζηθϑικϰλμνξοπϖρϱσςτυϕφχψω

- Greek bold letters (\symbf):

  $\boldsymbol{ΑΒΓΔΕΖΗΘϴΙΚΛΜΝΞΟΠΡΣΤΥΦΧΨΩαβγδεϵζηθϑικϰλμνξοπϖρϱσςτυϕφχψω}$

- Greek bold upright letters (\symbfup):

  ΑΒΓΔΕΖΗΘϴΙΚΛΜΝΞΟΠΡΣΤΥΦΧΨΩαβγδεϵζηθϑικϰλμνξοπϖρϱσςτυϕφχψω

- Dotless letters:

$$\imath + \jmath + \mathrm{\imath} + \mathrm{\jmath}$$

- Hebrew

$$\aleph + \beth + \gimel + \daleth$$

- Ligature (text): ﬀ ﬁ ﬂ ﬃ ﬄ
- Non-ligature (math):

$$ff \quad fi \quad fl \quad ffi \quad ffl + ff \quad fi \quad fl \quad ffi \quad ffl + \mathrm{ff} \quad \mathrm{fi} \quad \mathrm{fl} \quad \mathrm{ffi} \quad \mathrm{ffl}$$

- Miscellaneous:

$$\hbar + \hslash + \mathrm{Å}$$

$$\forall x > x_0, \exists \delta, \delta \in \emptyset$$

3.3 Equations test

- Basic:

$$1 + 2 - 3 \times 4 \div 5 \pm 6 \mp 7 \dotplus 8 = -a \oplus b \otimes c$$

- Binary relations

$$x + - \oplus \otimes \ominus \odot \oslash \cdot \cdot \times \div y$$

- Set theory

$$A \cap B \cup C \sqcap D \sqcup R \uplus k \uplus l \uplus m$$

$$A \subset B \supset C \subseteq D \supseteq E \quad F \quad G + A \sqsubset B \sqsupset C \sqsubseteq D \sqsupseteq E$$

$$\complement_U A \cup \complement_C C \subset \complement_U A \cup \complement_C C \in R \smallin Q \ni Z \smallni N$$

- Superscript and subscript:

$$2^2 + 2^{2^2} + 2^{2^{2^2}} + 2^{2^2} + x_a + x_{a_i} + x_{a_{i_1}}$$

- Arrows:

$$x \leftarrow y \rightarrow z \leftrightarrow w \nleftarrow y \nrightarrow z \nleftrightarrow w \Leftarrow a \Longrightarrow b \Leftrightarrow c \quad a = b \quad c$$

$$x \uparrow y \downarrow z \updownarrow w \Uparrow a \Downarrow b \Updownarrow c$$

$$p \nwarrow p \nearrow p \searrow p \swarrow p \Nwarrow p \Nearrow p \Searrow p \Swarrow p$$

$$x \leftharpoonup x \leftharpoondown x \upharpoonleft x \upharpoonright x \rightharpoonup x \rightharpoondown x \downharpoonleft x \downharpoonright x$$

$$A \longleftarrow B \longrightarrow C \longleftrightarrow D \Longleftarrow E \Longrightarrow F \Longleftrightarrow G$$

$$X \mapsfrom Y \mapsto Z \mapsup W \mapsdown P \Mapsfrom S \Mapsto R$$

$$M \longmapsfrom N \longmapsto O \Longmapsfrom K \Longmapsto L$$

$$f \rightleftarrows f \updownarrows f \leftrightarrows f \downuparrows g \rightrightarrows g \upuparrows g \leftleftarrows g \downdownarrows h \rrightarrow h \lleftarrow p \rightleftharpoons p \leftrightharpoons p \upharpoonleftdownharpoonright p \downharpoonleftupharpoonright p$$

- Math accents:

$$\acute{x}\ \grave{x}\ \check{x}\ \hat{x}\ \bar{x}\ \breve{x}\ \mathring{x}\ \dot{x}\ \ddot{x}\ \dddot{x}\ \ddddot{x}\ \overleftarrow{x}\ \vec{x}\ \overleftrightarrow{x}\ \overleftharpoon{x}\ \overrightharpoon{x}\ \tilde{x}\ \overset{*}{x}\ x\ x\ \overline{x}|\ \widehat{x}\ \widetilde{x}\ \overbracket{x}\ \underset{.}{x}\ \underset{..}{x}\ \underset{...}{x}\ \underleftharpoondown{x}\ \underrightharpoondown{x}\ \underleftarrow{x}\ \underrightarrow{x}$$

- Integral:

$$\int_0^\pi \sin x \,\mathrm{d}x = \int\limits_0^\pi \sin x \,\mathrm{d}x = \cos 0 - \cos\pi + C$$

$$\int_{-\infty}^{+\infty} \mathrm{d}z \iint_{-\infty}^{+\infty} \mathrm{d}^2 y \iiint_{-\infty}^{+\infty} \mathrm{d}^3 x \iiiint_{-\infty}^{+\infty} \mathrm{d}^4 p$$

$$\oint \mathrm{d}r \oiint \mathrm{d}\theta \oiiint \mathrm{d}\varphi$$

$$\int_0^\pi \sin x \,\mathrm{d}x = \int\limits_0^\pi \sin x \,\mathrm{d}x = \cos 0 - \cos\pi + C$$

$$\int_{-\infty}^{+\infty} \mathrm{d}z \iint_{-\infty}^{+\infty} \mathrm{d}^2 y \iiint_{-\infty}^{+\infty} \mathrm{d}^3 x \iiiint_{-\infty}^{+\infty} \mathrm{d}^4 p$$

$$\oint \mathrm{d}r \oiint \mathrm{d}\theta \oiiint \mathrm{d}\varphi$$

- Huge operators:

$$\int\limits_0^\infty \int_0^\infty \sum_{i=1}^\infty \prod_{j=i}^\infty \coprod_{k=i}^\infty$$

$$\sum_{i=1}^\infty \frac{1}{x^i} = \frac{1}{1-x} \qquad \prod_{i=1}^\infty \frac{1}{x^i} = x^{-n(n+1)/2} \qquad \coprod_{i=i}^\infty \frac{1}{x^i} = ?$$

- Huge operators (inline): $\int\limits_0^\infty \int_0^\infty \iint \mathrm{d}x \iiint \mathrm{d}y \iiiint \mathrm{d}p \oint \mathrm{d}r \oiint \mathrm{d}\theta \oiiint \mathrm{d}\varphi \sum_{i=1}^\infty \prod_{j=i}^\infty \coprod_{i=i}^\infty$
- Huge operators (inline): $\int\limits_0^\infty \int_0^\infty \iint \mathrm{d}x \iiint \mathrm{d}y \iiiint \mathrm{d}p \oint \mathrm{d}r \oiint \mathrm{d}\theta \oiiint \mathrm{d}\varphi \sum_{i=1}^\infty \prod_{j=i}^\infty \coprod_{i=i}^\infty$
- Fraction:

$$\frac{1}{2} + \frac{1}{\frac{2}{3} + 4} + \frac{\frac{1}{2} + 3}{4}$$

- Fraction (inline): $\frac{1}{2} + \frac{1g}{2} + \frac{1}{\frac{2}{3}+4} + \frac{\frac{1}{2}+3}{4}$
- Radical:

$$\sqrt{2} + \sqrt{2^2} + \sqrt{1 + \sqrt{2}} + \sqrt{1 + \sqrt{1 + \sqrt{3}}} + \sqrt{\sqrt{\sqrt{\sqrt{2}}}} + \sqrt{\frac{1}{2}}$$

$$\sqrt[3]{2} + \sqrt[3]{2^2} + \sqrt[3]{1 + \sqrt[3]{2}} + \sqrt[3]{1 + \sqrt[3]{1 + \sqrt[3]{3}}} + \sqrt[3]{\sqrt[3]{\sqrt[3]{\sqrt[3]{2}}}} + \sqrt[3]{\frac{1}{2}}$$

$$\sqrt[4]{2} + \sqrt[4]{2^2} + \sqrt[4]{1 + \sqrt[4]{2}} + \sqrt[4]{1 + \sqrt[4]{1 + \sqrt[4]{3}}} + \sqrt[4]{\sqrt[4]{\sqrt[4]{\sqrt[4]{2}}}} + \sqrt[4]{\frac{1}{2}}$$

$$\sqrt[x]{y} + \sqrt[x]{\sqrt[x]{y}} + \sqrt[x]{\sqrt[x]{\sqrt[x]{y}}} + \sqrt[x]{\frac{1}{2}} + \sqrt{\begin{matrix}x\\y\\z\\w\end{matrix}} + \sqrt[3]{\begin{matrix}x\\y\\z\\w\end{matrix}} + \sqrt[4]{\begin{matrix}x\\y\\z\\w\end{matrix}} + \sqrt[x]{\begin{matrix}x\\y\\z\\w\end{matrix}} + \sqrt{\begin{matrix}x\\y\\z\\w\\p\end{matrix}} + \sqrt[3]{\begin{matrix}x\\y\\z\\w\\p\end{matrix}} + \sqrt[4]{\begin{matrix}x\\y\\z\\w\\p\end{matrix}} + \sqrt[x]{\begin{matrix}x\\y\\z\\w\\p\end{matrix}}$$

$$\sqrt{x}}}}}}}}}}}}}}}}}}}}}}}}}$$

$$\sqrt[3]{x}}}}}}}}}}}}}}}}}}}}}}}}}$$

$$\sqrt[4]{x}}}}}}}}}}}}}}}}}}}}}}}}}$$

$$\sqrt[x]{\sqrt[x]{\sqrt[x]{\sqrt[x]{x}}}}$$

- Brackets:

$$(a)(A)(O)(Y)(y)(f)(Q)(T)(Y)(j)(q)$$

$$\Biggl(\biggl(\Bigl(\bigl((x)\bigr)\Bigr)\biggr)\Biggr) \quad \Biggl(\biggl(\Bigl(\bigl((x)\bigr)\Bigr)\biggr)\Biggr) \quad \Biggl[\biggl[\Bigl[\bigl[[x]\bigr]\Bigr]\biggr]\Biggr] \quad \Biggl\{\biggl\{\Bigl\{\bigl\{\{x\}\bigr\}\Bigr\}\biggr\}\Biggr\}$$

$$(x) + \left(x^2\right) + \left(\frac{1}{2}\right) + \left(\frac{2^2}{3}\right) + \left(\frac{\frac{1}{2}}{\frac{3}{4}}\right)$$

$$(|)[\|]\{|||\} \quad \bigl(|\bigr)\bigl[\|\bigr]\bigl\{|||\bigr\} \quad \Bigl(|\Bigr)\Bigl[\|\Bigr]\Bigl\{|||\Bigr\} \quad \biggl(|\biggr)\biggl[\|\biggr]\biggl\{|||\biggr\} \quad \Biggl(|\Biggr)\Biggl[\|\Biggr]\Biggl\{|||\Biggr\} \quad \left(\rule{0pt}{8em}|\right)\left[\|\right]\left\{|||\right\} \quad \left(\rule{0pt}{10em}|\right)\left[\|\right]\left\{|||\right\}$$

- More brackets:

$$\lceil ceiling \rceil \quad \lfloor floor \rfloor \quad \lgroup group \rgroup$$

- Bra-kets:

$$\langle x| + |x\rangle + \langle \alpha|\beta\rangle + \left|\alpha^2\right\rangle\!\left\langle\beta^2\right| + \left\langle\frac{1}{2}\right| + \left|\frac{1}{2}\right\rangle + \left\langle\frac{1}{2}\middle|\frac{1}{2}\right\rangle + \left|\frac{1}{2}\right\rangle\!\left\langle\frac{1}{2}\right| + \left\langle\frac{a^2}{b^2}\right| + \left|\frac{e^{x^2}}{e^{y^2}}\right\rangle$$

$$\langle | \rangle \quad \bigl\langle | \bigr\rangle \quad \Bigl\langle | \Bigr\rangle \quad \biggl\langle | \biggr\rangle \quad \Biggl\langle | \Biggr\rangle \qquad \langle\!\langle | \rangle\!\rangle \quad \bigl\langle\!\bigl\langle | \bigr\rangle\!\bigr\rangle \quad \Bigl\langle\!\Bigl\langle | \Bigr\rangle\!\Bigr\rangle \quad \biggl\langle\!\biggl\langle | \biggr\rangle\!\biggr\rangle \quad \Biggl\langle\!\Biggl\langle | \Biggr\rangle\!\Biggr\rangle$$

- Matrices:

$$\begin{pmatrix} a & b \\ c & d \end{pmatrix} + \begin{pmatrix} a & b \\ c & d \end{pmatrix}$$

$$\begin{pmatrix} a & b & c & d \\ x & y & z & w \end{pmatrix} \quad \begin{bmatrix} a & b & c & d \\ x & y & z & w \end{bmatrix} \quad \begin{Bmatrix} a & b & c & d \\ x & y & z & w \end{Bmatrix} \quad \begin{vmatrix} a & b & c & d \\ x & y & z & w \end{vmatrix} \quad \begin{Vmatrix} a & b & c & d \\ x & y & z & w \end{Vmatrix}$$

$$\begin{pmatrix} a & b & c & d \\ k & l & m & n \\ x & y & z & w \end{pmatrix} \quad \begin{bmatrix} a & b & c & d \\ k & l & m & n \\ x & y & z & w \end{bmatrix} \quad \begin{Bmatrix} a & b & c & d \\ k & l & m & n \\ x & y & z & w \end{Bmatrix} \quad \begin{vmatrix} a & b & c & d \\ k & l & m & n \\ x & y & z & w \end{vmatrix} \quad \begin{Vmatrix} a & b & c & d \\ k & l & m & n \\ x & y & z & w \end{Vmatrix}$$

$$\begin{pmatrix} a & b & c & d \\ k & l & m & n \\ p & q & s & t \\ x & y & z & w \end{pmatrix} \quad \begin{bmatrix} a & b & c & d \\ k & l & m & n \\ p & q & s & t \\ x & y & z & w \end{bmatrix} \quad \begin{Bmatrix} a & b & c & d \\ k & l & m & n \\ p & q & s & t \\ x & y & z & w \end{Bmatrix} \quad \begin{vmatrix} a & b & c & d \\ k & l & m & n \\ p & q & s & t \\ x & y & z & w \end{vmatrix} \quad \begin{Vmatrix} a & b & c & d \\ k & l & m & n \\ p & q & s & t \\ x & y & z & w \end{Vmatrix}$$

- Nablas:

$$\nabla x + \nabla f + \nabla \cdot \boldsymbol{u} + \nabla \times \boldsymbol{v}$$

$$\nabla \quad \boldsymbol{\nabla} \quad \mathit{\nabla} \quad \boldsymbol{\mathit{\nabla}}; \quad \tilde{\nabla} \quad \tilde{\boldsymbol{\nabla}} \quad \tilde{\mathit{\nabla}} \quad \tilde{\boldsymbol{\mathit{\nabla}}}$$

- Over-/underline and over-/underbraces

$$\overline{b} \quad \overline{ab} \quad \overline{abc} \quad \overline{abcd} \quad \overline{abcde} \quad \overline{a+b+c} \quad \overline{x_1, x_2, \dots, x_n}$$

$$\overparen{} \quad \overparen{b} \quad \overparen{ab} \quad \overparen{abc} \quad \overparen{abcd} \quad \overparen{abcde} \quad \overparen{a+b+c} \quad \overparen{x_1, x_2, \dots, x_n}^{n}$$

$$\overbracket{} \quad \overbracket{b} \quad \overbracket{ab} \quad \overbracket{abc} \quad \overbracket{abcd} \quad \overbracket{abcde} \quad \overbracket{a+b+c} \quad \overbracket{x_1, x_2, \dots, x_n}^{n}$$

$$\overbrace{} \quad \overbrace{b} \quad \overbrace{ab} \quad \overbrace{abc} \quad \overbrace{abcd} \quad \overbrace{abcde} \quad \overbrace{a+b+c} \quad \overbrace{x_1, x_2, \dots, x_n}^{n}$$

$$\underline{b} \quad \underline{ab} \quad \underline{abc} \quad \underline{abcd} \quad \underline{abcde} \quad \underline{a+b+c} \quad \underline{x_1, x_2, \dots, x_n}$$

$$\underparen{} \quad \underparen{b} \quad \underparen{ab} \quad \underparen{abc} \quad \underparen{abcd} \quad \underparen{abcde} \quad \underparen{a+b+c} \quad \underparen{x_1, x_2, \dots, x_n}_{n}$$

$$\underbracket{} \quad \underbracket{b} \quad \underbracket{ab} \quad \underbracket{abc} \quad \underbracket{abcd} \quad \underbracket{abcde} \quad \underbracket{a+b+c} \quad \underbracket{x_1, x_2, \dots, x_n}_{n}$$

$$\underbrace{} \quad \underbrace{b} \quad \underbrace{ab} \quad \underbrace{abc} \quad \underbrace{abcd} \quad \underbrace{abcde} \quad \underbrace{a+b+c} \quad \underbrace{x_1, x_2, \dots, x_n}_{n}$$

- Primes

$$x' x'' x''' x'''' x x^{x'} x^{x''} x^{x'''} x^{x''''} x^{x}$$

$$x'x''x'''x$$

$$x'x''x'''x$$

x′ x″ x‴ x' x'' x'''

```
\lim_{x\to\infty} \frac{1}{x^2} = 0
```

$$\lim_{x \to \infty} \frac{1}{x^2} = 0$$

```
\frac{\partial y(x)}{\partial x} = \frac{\mathrm{d}y(x)}{\mathrm{d}x} = y’(x)
```

$$\frac{\partial y(x)}{\partial x} = \frac{\mathrm{d}y(x)}{\mathrm{d}x} = y'(x)$$