

# mdugm for mathematical typesetting with Urw Garamond

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## 1 Introduction

The package `mdugm` consists of a full set of mathematical fonts, designed to be combined with Urw Garamond as the main text font<sup>1</sup>. All the  $\LaTeX$  files needed are also provided, as well as some driver configuration files.

Provided fonts cover the full family of symbol of plain  $\TeX$  and  $\LaTeX$ , the full set of the American Mathematical Society ( $\mathcal{AMS}$ ) symbols, the Ralph Smith's Formal Script symbol fonts (RSFS). Some extra symbol are also defined. Bold versions of all these symbols are provided.

All these symbols have been modified in shape (slightly), weight and size to match the Urw Garamond font family.

This document describes the definition specific to the `mdugm` font family. Please read `mathdesign-doc.pdf` for more informations.

### 1.1 Requirements

A complete  $\TeX$  installation is required. In particular, the Urw Garamond font family *must* be already present on your system. It is probably the case, as these fonts are now distributed with all the main  $\TeX$  distribution.

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<sup>1</sup>Urw Garamond is the font used in this document.

You only need the binary outline font files of the Urw Garamond font. If your T<sub>E</sub>X hierarchy is TDS compliant, you will find these files in the directory

```
$TEXMF/fonts/type1/urw/garamond
```

where \$TEXMF is the root of your T<sub>E</sub>X hierarchy (e.g. /usr/local/texmf).

If these files are not present on your system, create the previous directory, download the following files

```
ugmr8a.pfb    ugmri8a.pfb    ugmm8a.pfb    ugmmi8a.pfb
```

from a CTAN repository<sup>2</sup> and place all the files in the directory.

A *recent* T<sub>E</sub>X distribution is recommended (e.g. MikT<sub>E</sub>X v2.2 or later, teT<sub>E</sub>X v2.0 or later) as the configuration is really simple with the updmap utility.

## 1.2 The name of the game

The abbreviation mdugm is a nickname for Math Design Urw Garamond.

The first two letters (md) stand for the Math Design project. The last three letters are the nickname of Urw Garamond using Karl Berry's fontname conventions.

## 1.3 Copyright notice

The fonts MathDesignUGM font family is the symbol font family provided by the Math Design project. This program is free software; you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation; either version 2 of the License, or (at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License (appendix A of this document) for more details.

This is the copyright notice of the Urw Garamond :

Distribution and modification of the the URW Garamond fonts are subject to the Aladdin Free Public License <<http://www.artifex.com/downloads/doc/Public.htm>>

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## 2 Installation

In the same directory as this documentation, you will find a README file. It deals with all the installation and system configuration process.

## 3 Usage and configuration

To use the mdugm in your document simply add the following line:

```
\usepackage[urw-garamond]{mathdesign}
```

in the preamble.

### 3.1 Configuration file

The configuration files mdugm.cfg is loaded with the mdugm package. You can put in these file all the commands that L<sup>A</sup>T<sub>E</sub>X should load with mdugm. Please see the mdugm.cfg file provided for more informations.

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<sup>2</sup>you can search and download file from the CTAN web site <http://www.ctan.org/>

## A Font charts

mdugm-Regular-OT1

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	
0	Γ	Δ	Θ	Λ	Ξ	Π	Σ	Υ	Φ	Ψ	Ω	ff	fi	fl	ffi	fff	0
1	ı		`	'	˘	˙	-	˚	‚	ß	æ	œ	ø	Æ	Œ	Ø	1
2	⊗	!	”	#	\$	%	&	'	(	)	*	+	,	-	.	/	2
3	0	1	2	3	4	5	6	7	8	9	:	;	i	=	¿	?	3
4	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	4
5	P	Q	R	S	T	U	V	W	X	Y	Z	[	“	]	^	·	5
6	‘	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	6
7	p	q	r	s	t	u	v	w	x	y	z	-	—	”	~	..	7
8											Ł						8
A											ł						A
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	

*Comment:* This is the standard TeX OT1 encoding. Italic, bold and bold italic versions are also available. The character `lslashlslash` is missing.

mdugm-Regular-T1

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	
0	`	'	^	~	¨	“	°	˘	˙	-	˚	‚	‘	‚	‹	›	0
1	“	”	»	«	»	-	—	˚	ı		ff		fi	fl	ffi	fff	1
2	⌵	!	”	#	\$	%	&	'	(	)	*	+	,	-	.	/	2
3	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?	3
4	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	4
5	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	-	5
6	‘	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	6
7	p	q	r	s	t	u	v	w	x	y	z	{		}	~	-	7
8	Ă	Ą	Ć	Č	Ď	Ě	Ě	Ǧ	Ł	Ł	Ł	Ń	Ń	⊗	Œ	Ŕ	8
9	Ř	Ś	Š	Ş	Ț	Ț	Ů	Ů	Ÿ	Ž	Ž	Ž	Ij	ı	đ	Ş	9
A	ă	ą	ć	č	ď	ě	ě	ǧ	ł	ł	ł	ń	ń	⊗	œ	ř	A
B	ř	ś	š	ş	ț	ț	ů	ů	ÿ	ž	ž	ž	ij	ı	đ	ş	B
C	À	Á	Â	Ã	Ä	Å	Æ	Ç	È	É	Ê	Ë	Ì	Í	Î	Ï	C
D	Ð	Ñ	Ò	Ó	Ô	Õ	Ö	Œ	Ø	Ù	Ú	Û	Ü	Ý	Þ	Ï	D
E	à	á	â	ã	ä	å	æ	ç	è	é	ê	ë	ì	í	î	ï	E
F	ð	ñ	ò	ó	ô	õ	ö	œ	ø	ù	ú	û	ü	ý	þ	ß	F
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	

*Comment:* This is the standard TeX T1 encoding. Italic, bold and bold italic versions are also available. The characters `thorn` and `Thorn` are missing.

mdugm-Regular-TS1

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	
0																	0
1			”						←	→		’	‘	’			1
2					\$								,	—	.	/	2
3	0	1	2	3	4	5	6	7	8	9							3
4													∪				4
5								Ω							↑	↓	5
6			o o		†								∞				6
7																	7
8					†	‡		‰	•				f				8
9								™							°		9
A			¢	£	¤	¥		§	©	ª			¬		®		A
B	°	±	²	³	μ	¶	·		* 1	º	√		¼	½	¾	€	B
C																	C
D							×										D
E																	E
F							÷										F
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	

Comment: This is the standard TeX TS1 encoding. Many glyphs are missing. You must use the textcomp to have access to these symbols. Bold version is also available.

mdugm-Regular-OML

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	
0	Γ	Δ	Θ	Λ	Ξ	Π	Σ	Υ	Φ	Ψ	Ω	α	β	γ	δ	ε	0
1	ζ	η	θ	ι	κ	λ	μ	ν	ξ	π	ρ	σ	τ	υ	φ	χ	1
2	ψ	ω	ε	ϑ	Ϙ	ϙ	Ϛ	ϛ	←	↔	→	↘	‘	’	▷	◁	2
3	0	1	2	3	4	5	6	7	8	9	.	,	<	/	>	*	3
4	∂	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	4
5	P	Q	R	S	T	U	V	W	X	Y	Z	b	h	#	~	˘	5
6	ℓ	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	6
7	p	q	r	s	t	u	v	w	x	y	z	i	j	ρ	→	˘	7
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	

Comment: This is the standard TeX OML encoding. As you can notice, the greek letters are upright, hence the name "Regular". Bold version is also available.

mdugm-Italic-OML

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	
0	Γ	Δ	Θ	Λ	Ξ	Π	Σ	Υ	Φ	Ψ	Ω	α	β	γ	δ	ε	0
1	ζ	η	θ	ι	κ	λ	μ	ν	ξ	π	ρ	σ	τ	υ	φ	χ	1
2	ψ	ω	ε	ϑ	Ϙ	ϙ	Ϛ	ϛ	←	↔	→	↘	‘	’	▷	◁	2
3	0	1	2	3	4	5	6	7	8	9	.	,	<	/	>	*	3
4	∂	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	4
5	P	Q	R	S	T	U	V	W	X	Y	Z	b	h	#	~	˘	5
6	ℓ	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	6
7	p	q	r	s	t	u	v	w	x	y	z	i	j	ρ	→	˘	7
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	

*Comment:* This is the standard TeX OML encoding. This time, the greek letters are slanted. Bold version is also available.

mdugm-Regular-OMS

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	
0	-	·	×	*	÷	◊	±	≠	⊕	⊖	⊗	⊘	⊙	◯	◦	•	0
1	<	≡	⊆	⊇	≤	≥	≲	≳	~	≈	⊂	⊃	⋈	⋉	↖	↗	1
2	←	→	↑	↓	↔	↗	↘	ℓ	⇐	⇒	⇑	⇓	↔	↗	↘	∞	2
3	/	∞	∈	∋	Δ	∇	/	·	√	∃	¬	∅	ℜ	ℑ	⊤	⊥	3
4	<i>X</i>	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>	<i>F</i>	<i>G</i>	<i>H</i>	<i>I</i>	<i>J</i>	<i>K</i>	<i>L</i>	<i>M</i>	<i>N</i>	<i>O</i>	4
5	<i>P</i>	<i>Q</i>	<i>R</i>	<i>S</i>	<i>T</i>	<i>U</i>	<i>V</i>	<i>W</i>	<i>X</i>	<i>Y</i>	<i>Z</i>	U	∩	⊕	∧	∨	5
6	⊢	⊣	⊤	⊥	⌈	⌋	{	}	<	>			↕	↕	\	∴	6
7	√	∏	∇	∫	⊔	⊓	⊔	⊓	§	†	‡	¶	♣	♦	♥	♠	7
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	

*Comment:* This is the standard TeX OMS encoding. Bold version is also available.

mdugm-Regular-OMX

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F		
0	( )	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	{ }	< >		/ \		/ \	/ \	/ \	0	
1	( )	( )	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	{ }	{ }	< >	< >	/ \	/ \	1	
2	( )	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	{ }	{ }	< >	< >	/ \	/ \	/ \	/ \	2	
3	( \)	( \)	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	( \)	( \)	( \)	( \)	{ }	{ }	.	.	3	
4	\ /		< >	⊔ ⊔	⊔ ⊔	⊔ ⊔	⊔ ⊔	⊔ ⊔	⊔ ⊔	⊔ ⊔	⊔ ⊔	⊔ ⊔	⊔ ⊔	⊔ ⊔	⊔ ⊔	⊔ ⊔	4	
5	Σ Π	∫ U	∩ ⊕	∧ ∨	Σ Π	∫ U	∩ ⊕	∧ ∨	Σ Π	∫ U	∩ ⊕	∧ ∨	∩ ⊕	∧ ∨	∩ ⊕	∧ ∨	5	
6	⏏ ⏏	ˆ ˆ	ˆ ˆ	ˆ ˆ	ˆ ˆ	ˆ ˆ	ˆ ˆ	ˆ ˆ	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	{ }	{ }	6	
7	√ √	√ √	√ √	√ √	√ √	√ √	√ √	√ √	↑ ↓	˘ ˘	˘ ˘	˘ ˘	˘ ˘	˘ ˘	˘ ˘	˘ ˘	7	
8	( ( ( [	[ [ [ [ [ [	[ [ [ [ [ [	[ [ [ [ [ [	[ [ [ [ [ [	[ [ [ [ [ [	[ [ [ [ [ [	[ [ [ [ [ [	[ [ [ [ [ [	[ [ [ [ [ [	[ [ [ [ [ [	[ [ [ [ [ [	[ [ [ [ [ [	[ [ [ [ [ [	[ [ [ [ [ [	[ [ [ [ [ [	[ [ [ [ [ [	8
9	] ] ] ]	[ [ [ [ [ [	[ [ [ [ [ [	[ [ [ [ [ [	[ [ [ [ [ [	[ [ [ [ [ [	[ [ [ [ [ [	[ [ [ [ [ [	[ [ [ [ [ [	[ [ [ [ [ [	[ [ [ [ [ [	[ [ [ [ [ [	[ [ [ [ [ [	[ [ [ [ [ [	[ [ [ [ [ [	[ [ [ [ [ [	[ [ [ [ [ [	9
A	[ [ [ [ [ [	[ [ [ [ [ [	[ [ [ [ [ [	[ [ [ [ [ [	[ [ [ [ [ [	[ [ [ [ [ [	[ [ [ [ [ [	[ [ [ [ [ [	[ [ [ [ [ [	[ [ [ [ [ [	[ [ [ [ [ [	[ [ [ [ [ [	[ [ [ [ [ [	[ [ [ [ [ [	[ [ [ [ [ [	[ [ [ [ [ [	A	
B	[ [ [ [ [ [	[ [ [ [ [ [	[ [ [ [ [ [	[ [ [ [ [ [	[ [ [ [ [ [	[ [ [ [ [ [	[ [ [ [ [ [	[ [ [ [ [ [	[ [ [ [ [ [	[ [ [ [ [ [	[ [ [ [ [ [	[ [ [ [ [ [	[ [ [ [ [ [	[ [ [ [ [ [	[ [ [ [ [ [	[ [ [ [ [ [	[ [ [ [ [ [	B
C	/ / / \	/ / / \	/ / / \	/ / / \	/ / / \	/ / / \	/ / / \	/ / / \	/ / / \	/ / / \	/ / / \	/ / / \	/ / / \	/ / / \	/ / / \	/ / / \	/ / / \	C
D	˘ ˘	˘ ˘	˘ ˘	˘ ˘	˘ ˘	˘ ˘	˘ ˘	˘ ˘	˘ ˘	˘ ˘	˘ ˘	˘ ˘	˘ ˘	˘ ˘	˘ ˘	˘ ˘	˘ ˘	D
E	˘ ˘	˘ ˘	˘ ˘	˘ ˘	˘ ˘	˘ ˘	˘ ˘	˘ ˘	˘ ˘	˘ ˘	˘ ˘	˘ ˘	˘ ˘	˘ ˘	˘ ˘	˘ ˘	˘ ˘	E
F	˘ ˘	˘ ˘	˘ ˘	˘ ˘	˘ ˘	˘ ˘	˘ ˘	˘ ˘	˘ ˘	˘ ˘	˘ ˘	˘ ˘	˘ ˘	˘ ˘	˘ ˘	˘ ˘	˘ ˘	F

*Comment:* The upper part of this chart is the standard  $\TeX$  OMX encoding. The lower part contains additional big delimiters and wide accents.

mdugm-Regular-MDA

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	
0	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	0
1	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	1
2	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	2
3	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	3
4	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	4
5	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	5
6	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	6
7	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	7
8	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	8
9	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	9
A	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	A
B	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	B
C	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	C
D	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	D
E	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	E
F	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	$\#$	F
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	

Comment: This is the Math Design A encoding, corresponding to the two  $\mathcal{A}\mathcal{M}$ Sfonts. Bold version is also available.

mdugm-Regular-MDB

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	
0	$\epsilon$	$\ni$	$\notin$	$\neq$	$\perp$												0
1																	1
2																	2
3																	3
4	$\circ$																4
5																	5
6																	6
7																	7
8	$f$	$f$	$f$	$f$	$f$	$f$	$f$	$f$	$f$	$f$	$f$	$f$					8
9																	9
A																	A
B																	B
C																	C
D																	D
E																	E
F																	F
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	

Comment: This is the Math Design B encoding, corresponding to the extra symbols provided by Math Design.

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Version 2, June 1991

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