

mdbch for mathematical typesetting with Bitstream Charter

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1 Introduction

The package `mdbch` consists of a full set of mathematical fonts, designed to be combined with Bitstream Charter as the main text font¹. All the \TeX files needed are also provided, as well as some driver configuration files.

Provided fonts cover the full family of symbol of plain \TeX and $\mathbb{E}\TeX$, 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 Bitstream Charter font family.

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

1.1 Requirements

A complete \TeX installation is required. In particular, the Bitstream Charter 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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¹Bitstream Charter is the font used in this document.

You only need the binary outline font files of the Bitstream Charter font. If your \TeX hierarchy is TDS compliant, you will find these files in the directory

```
$TEXMF/fonts/type1/bitstream/charter
```

where $\$TEXMF$ is the root of your \TeX hierarchy (e.g. `/usr/local/texmf`).

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

```
bchr8a.pfb    bchri8a.pfb    bchb8a.pfb    bchbi8a.pfb
```

from a CTAN repository² and place all the files in the directory.

A recent \TeX distribution is recommended (e.g. Mik \TeX v2.2 or later, $\text{t}\epsilon\text{X}$ v2.0 or later) as the configuration is really simple with the `updmap` utility.

1.2 The name of the game

The abbreviation `mdbch` is a nickname for Math Design Bitstream Charter.

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

1.3 Copyright notice

The fonts MathDesignBCH 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.

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This is the copyright notice of the Bitstream Charter :

(c) Copyright 1989-1992, Bitstream Inc., Cambridge, MA.

You are hereby granted permission under all Bitstream propriety rights to use, copy, modify, sublicense, sell, and redistribute the 4 Bitstream Charter (r) Type 1 outline fonts for any purpose and without restriction; provided, that this notice is left intact on all copies of such fonts and that Bitstream's trademark is acknowledged as shown below on all unmodified copies of the 4 Charter Type 1 fonts.

BITSTREAM CHARTER is a registered trademark of Bitstream Inc.

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 `mdbch` in your document simply add the following line:

```
\usepackage[bitstream-charter]{mathdesign}
```

in the preamble.

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

3.1 Configuration file

The configuration files `mdbch.cfg` is loaded with the `mdbch` package. You can put in these file all the commands that `TeX` should load with `mdbch`. Please see the `mdbch.cfg` file provided for more informations.

A Font charts

mdbch-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	ffl	0
1	ı		˘	˙	˚	˛	˜	˝	ˆ	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	[“]	ˆ	˙	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.

mdbch-Regular-T1

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	
0	˘	˙	˚	˛	˜	˝	ˆ	˙	˚	˛	˜	˝	ˆ	˙	˚	˛	0
1	“	”	„	«	»	–	—		o	ı		ff	fi	fl	ffi	ffl	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	Ę	Ĝ	Í	Ĺ	Ł	Ń	Ň	◊	Œ	Ŕ	8
9	Ř	Ś	Ŝ	Ş	Ť	Ț	Ů	Ű	ÿ	Ž	Ż	Ž	IJ	ı	đ	š	9
A	ă	ą	ć	č	ď	ě	ę	ğ	í	ĺ	ł	ń	ň	◊	œ	ř	A
B	ř	ś	ŝ	ş	ț	ț	ů	ű	ÿ	ž	ż	ž	ij	ı	đ	£	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	ß	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.

mdbch-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								Ω						∪			4
5															↑	↓	5
6			o o		†									∅			6
7																	7
8					†	‡		% ₀₀	•				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 T_EX TS1 encoding. Many glyphs are missing. You must use the textcomp to have access to these symbols. Bold version is also available.

mdbch-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	ƒ	‡	§	¨	ˆ	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	ı	J	ø	→	ˆ	7
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	

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

mdbch-Italic-OML

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	
0	<i>Γ</i>	<i>Δ</i>	<i>Θ</i>	<i>Λ</i>	<i>Ξ</i>	<i>Π</i>	<i>Σ</i>	<i>Υ</i>	<i>Φ</i>	<i>Ψ</i>	<i>Ω</i>	<i>α</i>	<i>β</i>	<i>γ</i>	<i>δ</i>	<i>ε</i>	0
1	<i>ζ</i>	<i>η</i>	<i>θ</i>	<i>ι</i>	<i>κ</i>	<i>λ</i>	<i>μ</i>	<i>ν</i>	<i>ξ</i>	<i>π</i>	<i>ρ</i>	<i>σ</i>	<i>τ</i>	<i>υ</i>	<i>φ</i>	<i>χ</i>	1
2	<i>ψ</i>	<i>ω</i>	<i>ε</i>	<i>ϑ</i>	<i>Ϙ</i>	<i>ϙ</i>	<i>Ϛ</i>	<i>ϛ</i>	<i>←</i>	<i>→</i>	<i>↔</i>	<i>↔</i>	<i>‘</i>	<i>’</i>	<i>▷</i>	<i>◁</i>	2
3	<i>0</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>	<i>8</i>	<i>9</i>	<i>.</i>	<i>,</i>	<i><</i>	<i>/</i>	<i>></i>	<i>*</i>	3
4	<i>∂</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>	<i>ƒ</i>	<i>‡</i>	<i>§</i>	<i>¨</i>	<i>ˆ</i>	5
6	<i>ℓ</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>	6
7	<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>	<i>ı</i>	<i>J</i>	<i>ø</i>	<i>→</i>	<i>ˆ</i>	7
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	

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

mdbch-Regular-OMS

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	
0	-	·	×	*	÷	◊	±	∓	⊕	⊖	⊗	⊘	⊙	◯	◦	•	0
1	<	≡	⊆	⊇	≤	≥	≲	≳	~	≈	⊂	⊃	⊂	⊃	⋈	⋉	1
2	←	→	↑	↓	↔	↗	↘	↔	⇐	⇒	↑	↓	↔	↗	↘	∝	2
3	/	∞	∈	∃	Δ	∇	/	·	∀	∃	¬	∅	ℵ	ℶ	ℷ	⊥	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.

mdbch-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	⊔ ⊔	˘ ˘	˘ ˘	˘ ˘	[]	[]	[]	[]	[]	[]	[]	[]	[]	[]	{ }	{ }	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.

mdbch-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 $\mathcal{A}\mathcal{M}\mathcal{S}$ fonts. Bold version is also available.

mdbch-Regular-MDB

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	
0	ϵ	\exists	\notin	\neq	\perp												0
1																	1
2																	2
3																	3
4	\circ																4
5																	5
6																	6
7																	7
8	\mathfrak{f}	\mathfrak{f}	\mathfrak{f}	\mathfrak{f}	\mathfrak{f}	\mathfrak{f}	\mathfrak{f}	\mathfrak{f}	\mathfrak{f}	\mathfrak{f}	\mathfrak{f}	\mathfrak{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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