L2/26-140R

ISO/IEC JTC1/SC2/WG2 **N5336R5**
LUCP L-2629

Universal Multiple-Octet Coded Character Set
International Organization for Standardization
Internationale Standardisierungs-Organisation
Organisation Internationale de Normalisation
Διεθνής Οργανισμός Τυποποίησης
Международная организация по стандартизации

Doc Type: Working Group Document

Title: Proposal to encode miscellaneous mathematical symbols

Source: Uwe Mayer, Siegmund Probst, David Rabouin, Elisabeth Rinner, Andreas Stötzner, Achim Trunk, Charlotte Wahl
Version: 5th revision
Status: final, updated
Action: for SEWG and UTC review
Date: October 8, 2026
Requester's reference: LUCP L-2629

1. Background – Miscellaneous symbols in historic sources

This proposal is part of the research program upon historical mathematical sources, conducted by the CNRS Philiumm project (headed by Prof. David Rabouin, University of Paris) and supported by researchers from the Landesbibliothek Hanover (Germany). For more background information about the Philiumm project and the related research work, please visit the Philiumm website or see doc. no. N5277. In this proposal we introduce a number of various symbols mainly from the field of historical mathematics.

2. Revision history

2nd version (1st revision): After discussion with SEWG and UTC experts and following the subsequent recommendations, we have dropped a few candidates (for various reasons) and proposed a selection of 13 new characters, of which 3 are combining characters.

In the 2nd revision (L-2604) the three combing characters ◌̈, ◌̣ and ◌̰ have been omitted. They will be revised separately and will be subject to a new proposal, possibly alongside other new characters of a similar kind. The remaining 10 characters have been evaluated eligible for encoding at the January 15 and February 24 meetings (2026).

By the 3rd revision we followed the recommendations from Febr. 24, to clarify the glyph's relations to the math axis, to define the two wavy characters as baseline characters; and to add some subheading and other information. We proposed the new characters for the range **1DB22** to **1DB2B**.

In its 4th revision one character name has been changed into CASTING OUT NINES.

This **5th revision** remains unchanged in general but we provide some additional rationale with regard to 1DB24 ┬ PROPORTION WITH ONE STROKE and the similar looking character 22A4.

3. Characters

proposed subheading:
Miscellaneous mathematical symbols

or:
Historic mathematical symbols

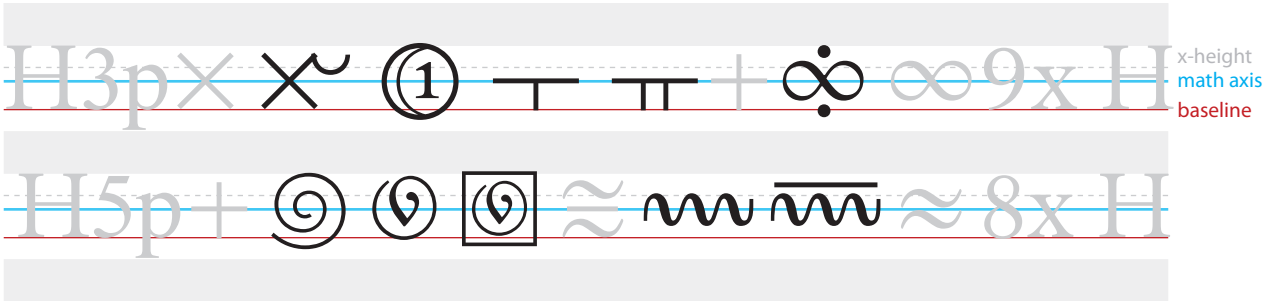
proposed characters:

1DB22		CASTING OUT NINES
1DB23		LUNATE ENCIRCLED DIGIT ONE
1DB24		PROPORTION WITH ONE STROKE
1DB25		PROPORTION WITH TWO STROKES
1DB26		INFINITY WITH TWO DOTS
1DB27		INVOLVED
1DB28		LEIBNIZIAN ENCIRCLED V
1DB29		LEIBNIZIAN ENCIRCLED V IN BOX
1DB2A		HORIZONTAL WAVY LINE
1DB2B		HORIZONTAL WAVY LINE WITH BAR ABOVE

For the last two characters the term WIGGLY LINE has also been considered, a term that is already used for a few encoded characters. However, we see no advantage in linking the two new characters to those by naming, and the word WAVY (already used with U+2307) seems straightforward descriptive and much more appropriate to us.

The glyph of **1DB24** ⊤ PROPORTION WITH ONE STROKE shares the same basic grapheme structure with character 22A4 ⊤ DOWN TACK. We see the two char.s disunified for two reasons: a) the horizontal bar of 1DB24 needs to be positioned at the math axis height (for 22A4 this is not required); and b) 1DB24 and its fellow 1DB25 tend to be considerably wider than 22A4, by evidence of text samples shown on the following pages (in this document the glyph proportion is only of moderate width, for practical reasons).

All the characters proposed appear mainly in math formulae and therefore the representative glyphs need to be adjusted to the math axis:



We propose the following encoding scheme:

1DB00 Miscellaneous Symbols and Arrows Extended 1DBFF

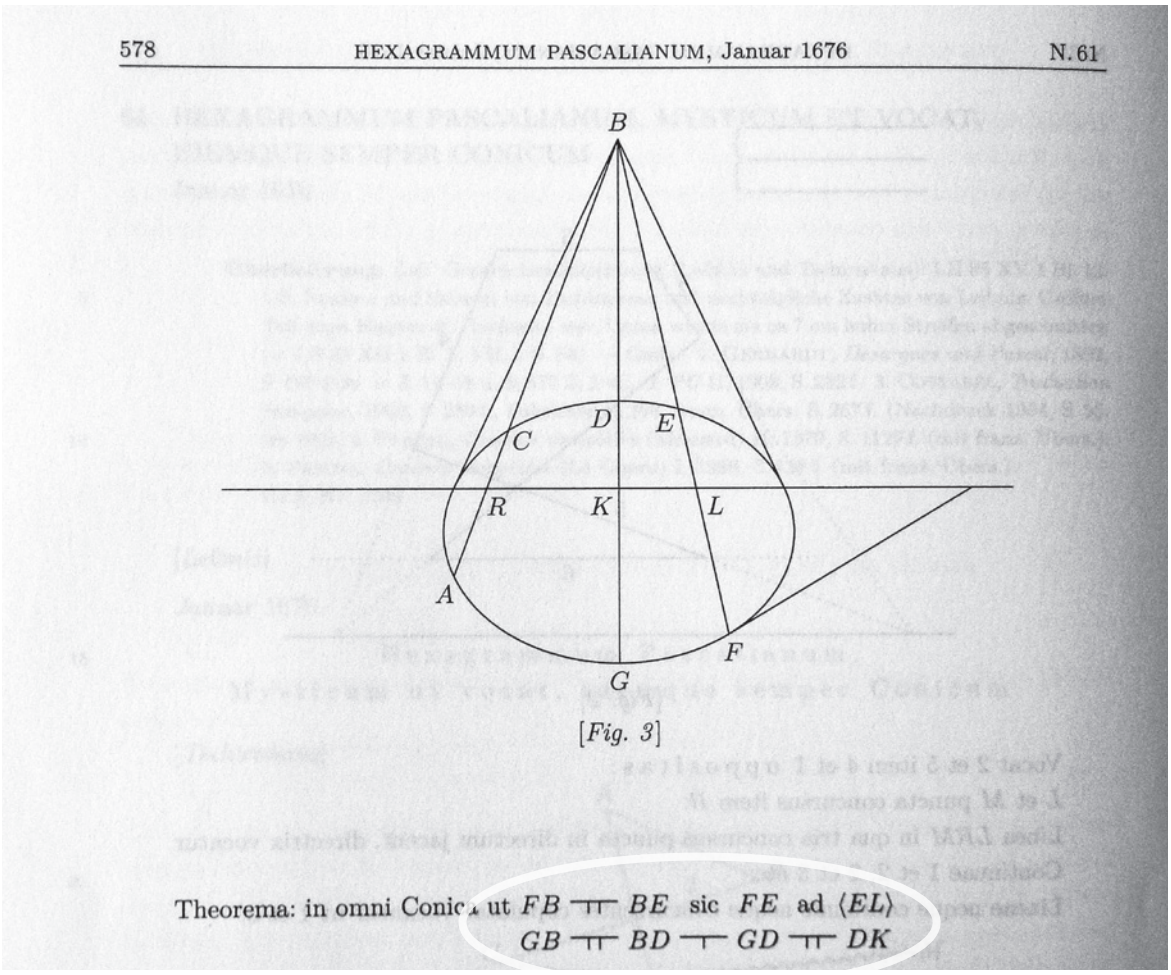
	1DB0	1DB1	1DB2	1DB3
0	1DB00	1DB10	1DB20	1DB30
1	1DB01	1DB11	1DB21	1DB31
2	1DB02	1DB12	1DB22	1DB32
3	1DB03	1DB13	1DB23	1DB33
4	1DB04	1DB14	1DB24	1DB34
5	1DB05	1DB15	1DB25	1DB35
6	1DB06	1DB16	1DB26	1DB36
7	1DB07	1DB17	1DB27	1DB37
8	1DB08	1DB18	1DB28	1DB38
9	1DB09	1DB19	1DB29	1DB39
A	1DB0A	1DB1A	1DB2A	1DB3A
B	1DB0B	1DB1B	1DB2B	1DB3B
C	1DB0C	1DB1C	1DB2C	1DB3C
D	1DB0D	1DB1D	1DB2D	1DB3D
E	1DB0E	1DB1E	1DB2E	1DB3E
F	1DB0F	1DB1F	1DB2F	1DB3F

Leibnizian operators
new in UCS 18.0

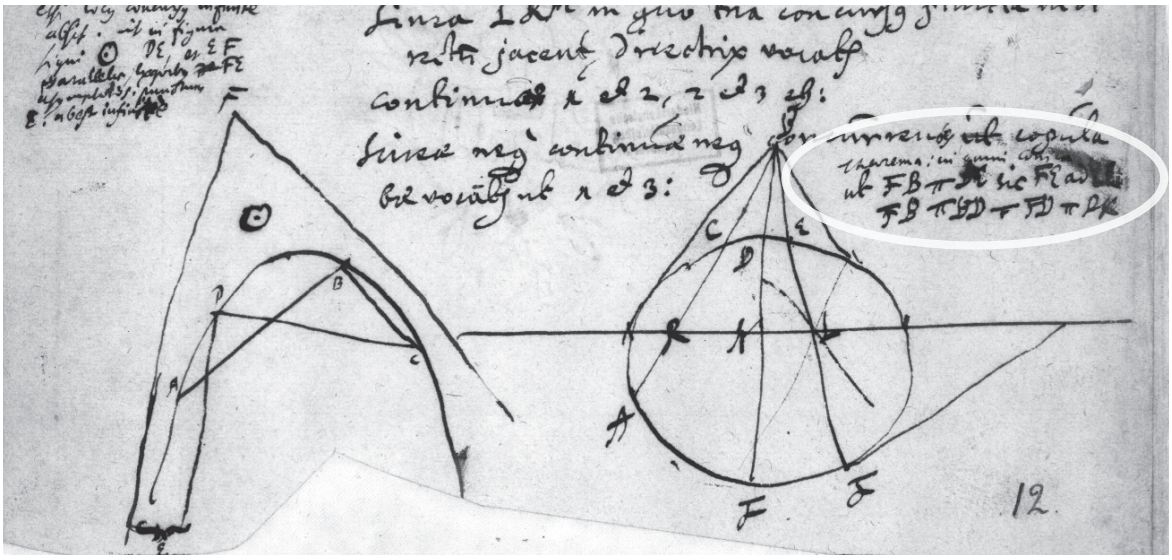
Letterlike symbols
see proposal N5335R (L-2535)
codepoint allocation updated, according to L-2628

Miscellaneous mathematical symbols

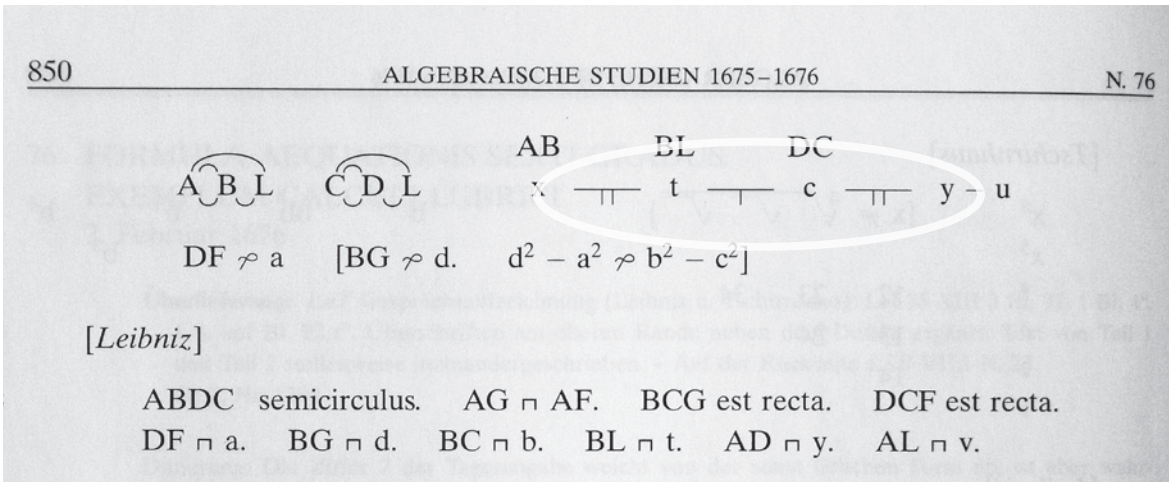
4. Figures and explanations



⊤ PROPORTION WITH ONE STROKE, ⊤⊤ PROPORTION WITH TWO STROKES
LAA VII-7 p. 578; manuscript: see next figure



⊤ PROPORTION WITH ONE STROKE, ⊤⊤ PROPORTION WITH TWO STROKES
LH 35 XV 1, fol. 12r



850 ALGEBRAISCHE STUDIEN 1675–1676 N. 76

AB BL DC

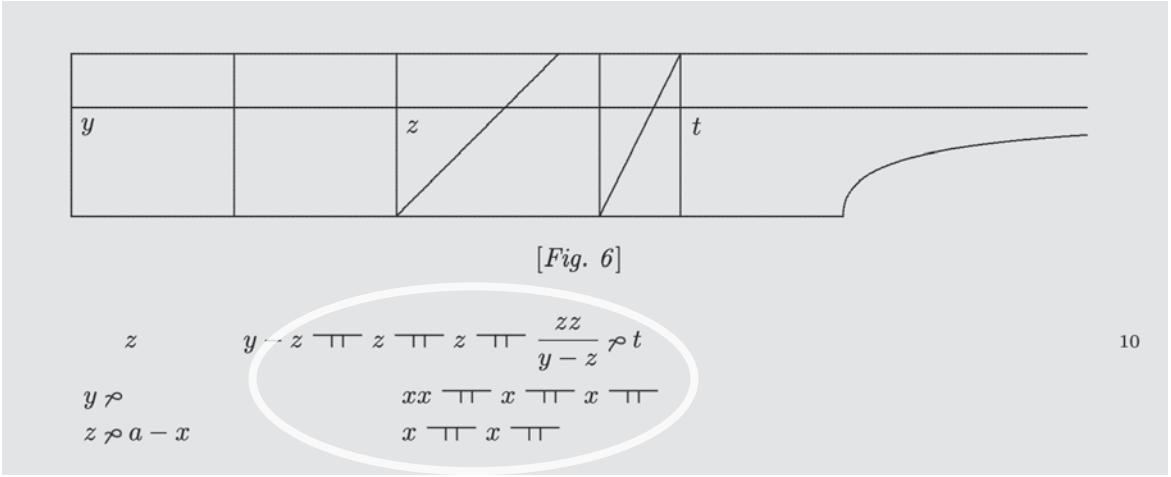
A B L C D L x ⊤⊤ t ⊤ c ⊤⊤ y – u

DF ⊰ a [BG ⊰ d. $d^2 - a^2 \prec b^2 - c^2$]

[*Leibniz*]

ABDC semicirculus. AG ⊓ AF. BCG est recta. DCF est recta.
DF ⊓ a. BG ⊓ d. BC ⊓ b. BL ⊓ t. AD ⊓ y. AL ⊓ v.

⊤ PROPORTION WITH ONE STROKE, ⊤⊤ PROPORTION WITH TWO STROKES
LAA VII-2 p. 850



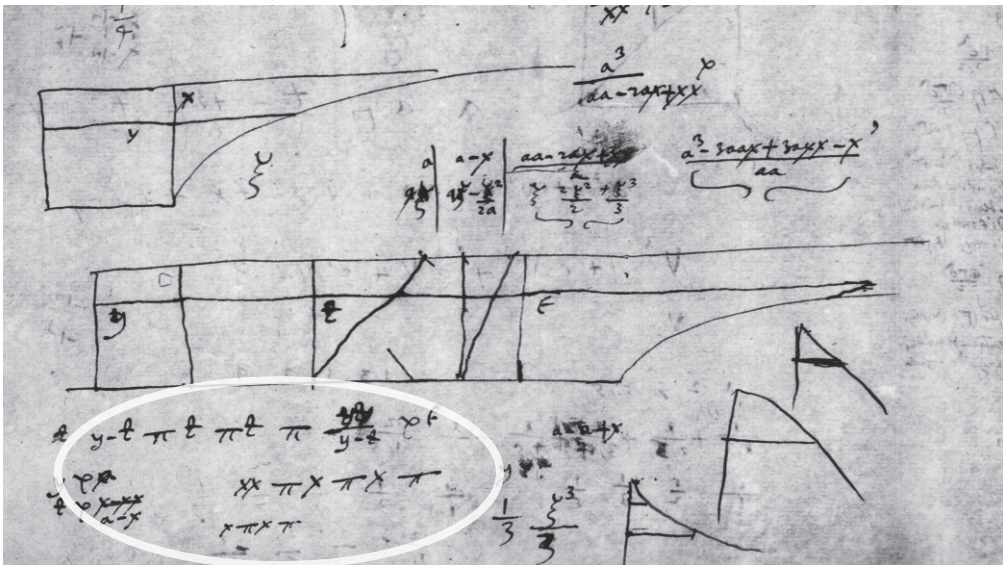
[*Fig. 6*]

z $y - z$ ⊤⊤ z ⊤⊤ z ⊤⊤ $\frac{zz}{y-z} \prec t$

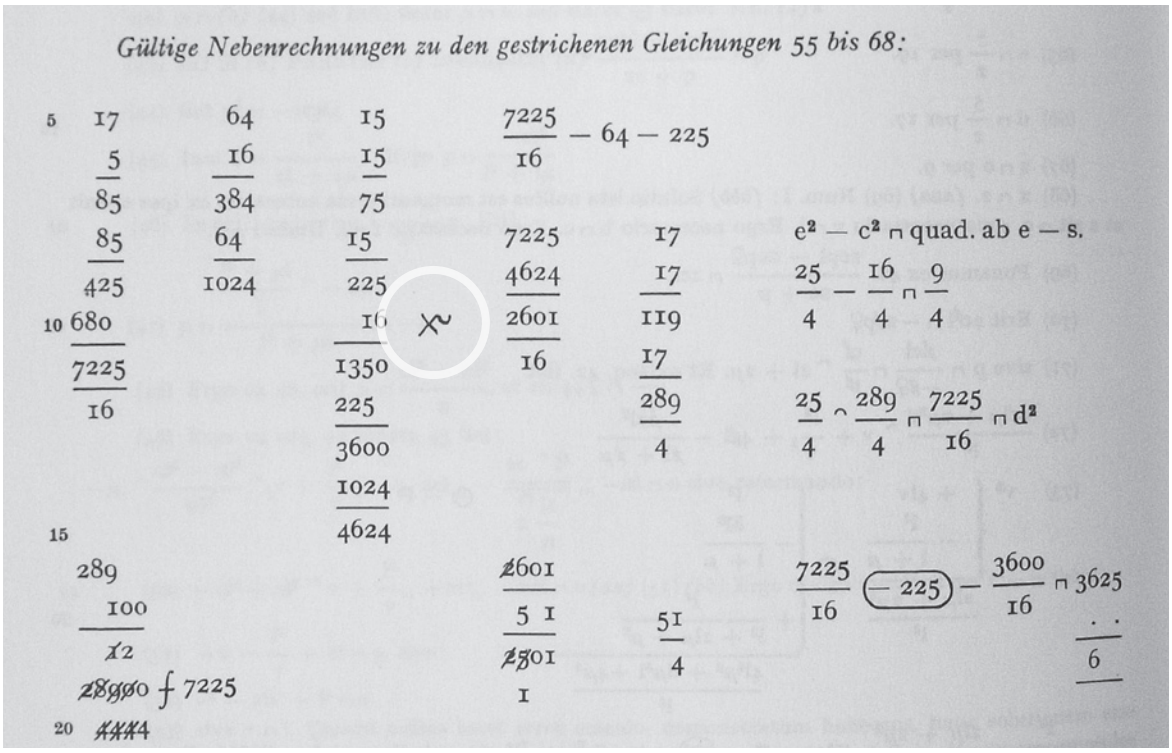
$y \prec$ xx ⊤⊤ x ⊤⊤ x ⊤⊤

$z \prec a - x$ x ⊤⊤ x ⊤⊤

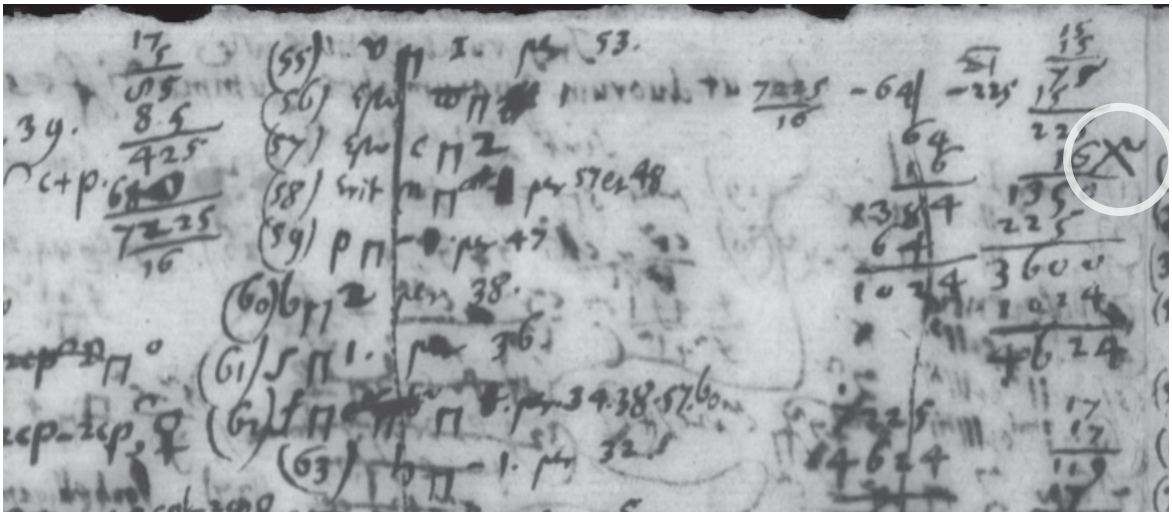
⊤⊤ PROPORTION WITH TWO STROKES
LAA VII-6 p. 271



⊤⊤ PROPORTION WITH TWO STROKES
LH 35 V 6, fol. 10v



⋊ CASTING OUT NINES – LAA VII-1 p.408; corresponding manuscript LH 35 III A 16 fol. 24v



In his *History of Mathematical Notations* (vol. 1, p. 261) Florian Cajori explains the origin of this symbol in the notation method of casting out nines, by German author Christoph Rudolff: *Rudolph checks the multiplication 5678 times 65 = 369070 by casting out the 9's (i.e., dividing the sum of the digits by 9 and noting the residue); he finds the residue for the product to be 7, for the factors to be 2 and 8. He writes down* “ 7 / 8 ⋊ 2 / 7 ”.

Leibniz often uses a slightly modified version (LAA VII-5 p. XXXVI and p. 53), where he notes the product of the residues of the factors in the top right arc added to the cross, before reducing the number modulo 9:

Sometimes he writes down *just* the symbol as a memory mark (without adding the residues), in order to note that he has checked the calculation by casting out nines. *This* use case we regard relevant for encoding the symbol.

2 $\frac{450}{64}$ $\frac{64}{18}$ – ~~2~~ ⌒ 10 ⊓

450	64	64	8100	4
18	64	18	4096	~~5~~8
360	256	512	12196	~~11~~~~5~~20 ƒ 17
45	384	64	11520	~~6~~~~7~~66
8100	4096	11520	676	67

18	64	450	130
5	5	320	16
90	320	130	114

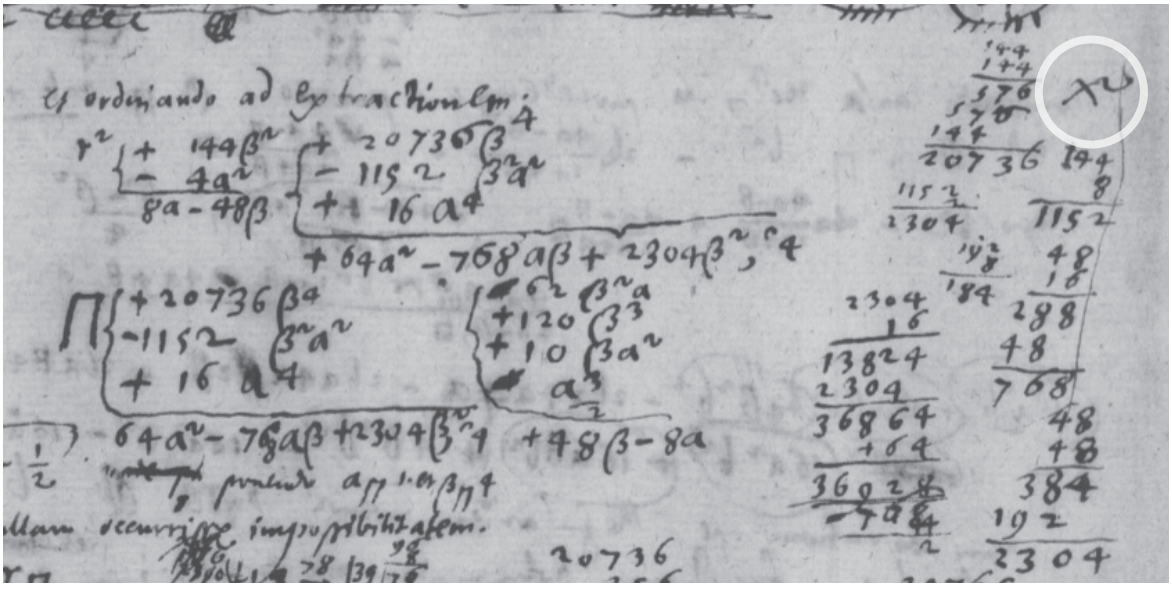
660 DIFFERENZEN, FOLGEN, REIHEN 1672–1676 N. 44_2

[*Nebenrechnungen und Zusätze zu S. 654 Z. 1–8*]

144	144	48	48	2304	20736	~~2~~ 2
144	8	16	48	16	16	~~10~~9~~3~~1
576	1152	288	384	13824	124416	~~331~~~~776~~ ƒ 144
576		48	192	2304	20736	~~230~~~~44~~4
144		768	2304	36864	331776	~~2300~~
20736				+ 64		23
				36928		
				−768		
				4		
				2 [*bricht ab*]		

⤫ CASTING OUT NINES

LAA VII-3 p. 455 (top), p. 660; manuscript part of the latter sample (LH 35 VIII 4 fol. 6r, below)



302 ARITHMETISCHE KREISQUADRATUR 1673–1676 N. 26

Als men de $\angle ACB$ wil 2 mahl in 2 gelijcke deel, deelen; om AF te vinden, soo kan men het dus oock doen[:]

Regel.

Gelijck als

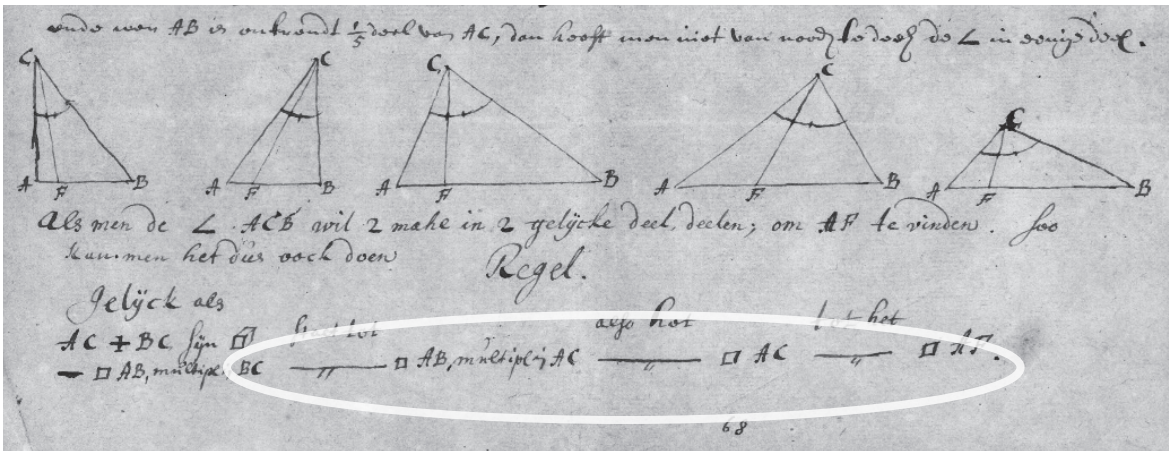
$AC + BC$, sijn ⧉ staet tot also het tot het

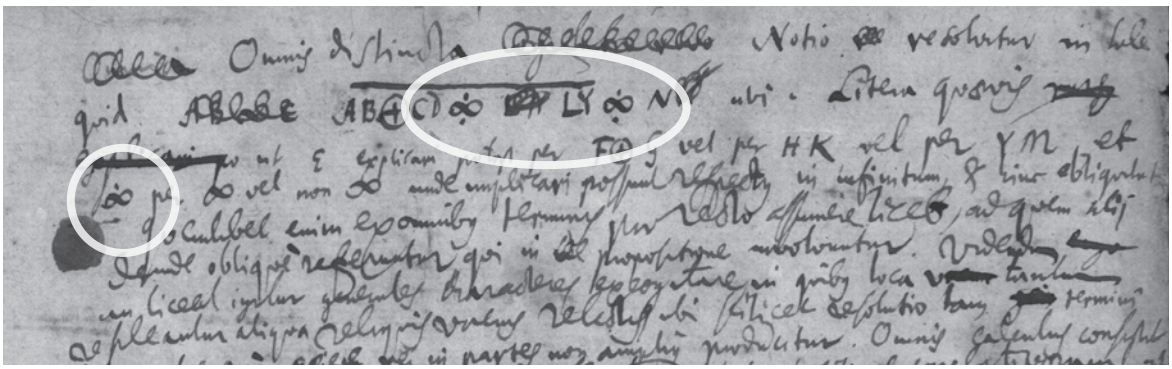
$-\square AB$, multipl. in BC ╥ $\square AB$, multipl. in AC ╥ $\square AC$ ╥ $\square AF$.

╥ PROPORTION WITH TWO STROKES

This figure also shows the use of ⧉ WHITE CUBE (provisional assignment: u1F7F7).

LAA VII-6 p. 302; LH 35 VIII 30, fol. 68r (below)





⚭ INFINITY WITH DOTS

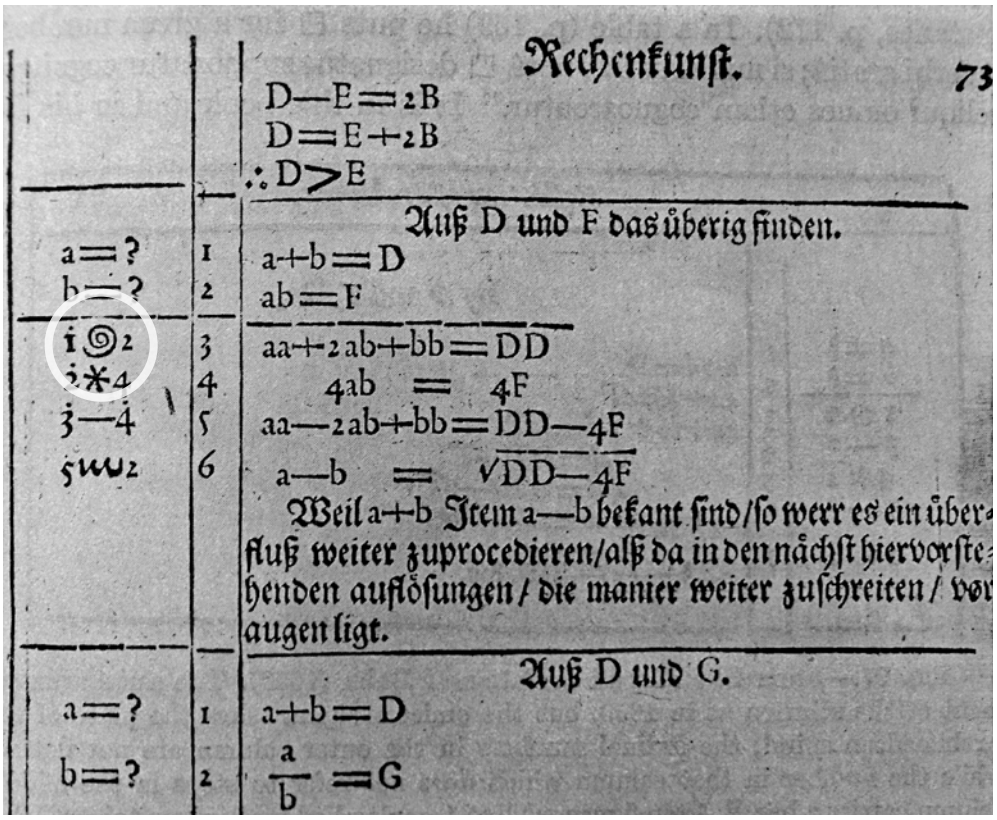
LH 4 VII B 2, fol. 73v (top), LAA VI-4 p. 873 (below)

Magnitudo. Sensus. Appetitus. Cogitatio. Qualitates Sensibiles.

⟨ – ⟩ in characteristica omnia distincte cogitabilia revocari possunt ad $\overline{AB + CD \underset{\text{non } \infty}{\infty} LM} \infty N$, hoc uno not⟨ato⟩ ⟨ – – – ⟩ et contra explicari ⟨ – – – ⟩ quod quaedam literae in ⟨ – ⟩ ut Y pro S pon⟨–⟩

Omnis distincta Notio resolvitur in tale quid $\overline{AB \oplus CD \infty LY} \infty N$ ubi Litera quaevis ut E explicari potest per $F \oplus G$ vel per HK vel per YM et ⚭ per ∞ vel *non* ∞ unde implicari possunt respectus in infinitum, et hinc obliquitat[es].

Quemlibet enim ex omnibus terminis pro recto assumere licet, ad quem alii deinde



Rechenkunst. 73

D—E = 2B
D = E + 2B
∴ D > E

Auß D und F das überig finden.

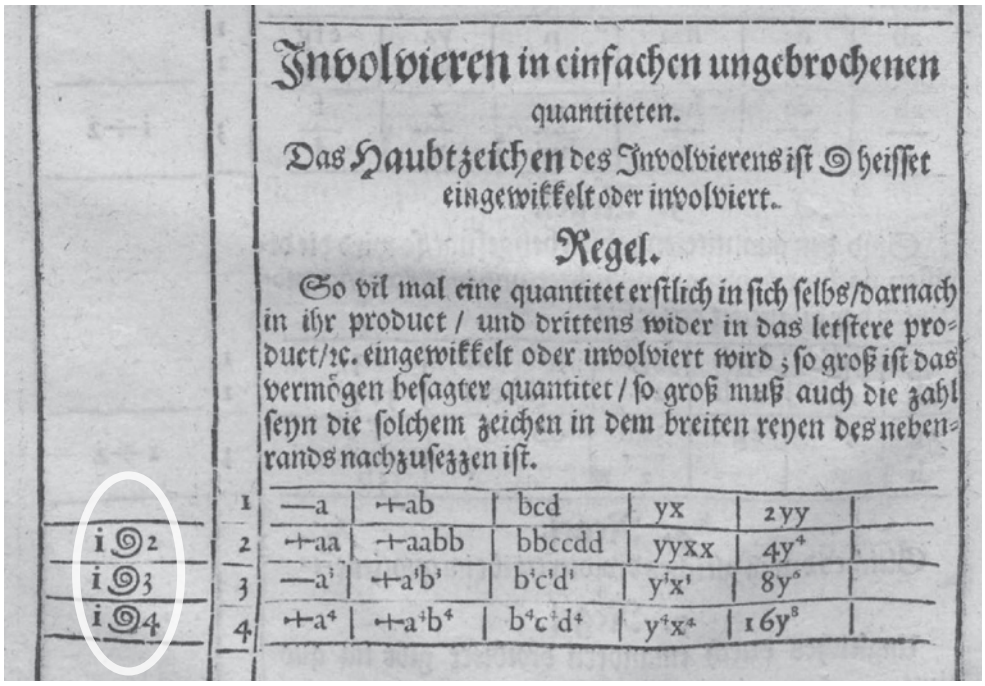
a = ?	1	a + b = D
b = ?	2	ab = F
i ◎ 2	3	aa + 2ab + bb = DD
2 ✱ 4	4	4ab = 4F
3 — 4	5	aa — 2ab + bb = DD — 4F
5 ww 2	6	a — b = √(DD — 4F)

Weil a + b Item a — b bekant sind/so werr es ein überfluß weiter zuprocedieren/alß da in den nächst hiervorstehenden auflösungen/die manier weiter zuschreiten/vor augen ligt.

Auß D und G.

a = ?	1	a + b = D
b = ?	2	a/b = G

◎ INVOLVED – J. H. Rahn, Teutsche Algebra, 1659 (after Cajori).
In expressions of the form *a* ◎ *b*, the sign ◎ is used to denote the exponentiation of *a* by the power of *b*. In his "Teutsche Algebra" from 1659, the Swiss mathematician Johann Heinrich Rahn refers to the operation as "involvieren" (= to involve).



Involvieren in einfachen ungebrochenen quantiteten.

Das Haubtzeichen des Involvierens ist ◎ heisset eingewikkelt oder involviert.

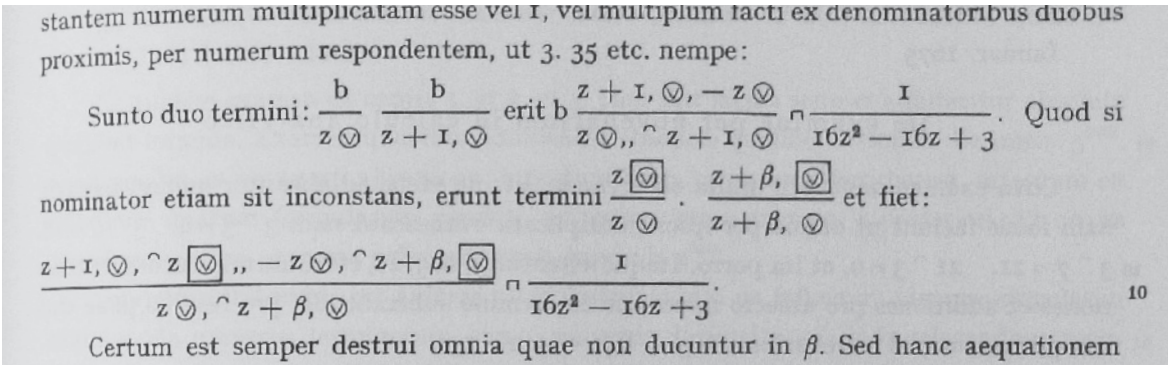
Regel.

So vil mal eine quantitet erstlich in sich selbs/darnach in ihr product / und drittens wider in das letztere product/rc. eingewikkelt oder involviert wird ; so groß ist das vermögen besagter quantitet / so groß muß auch die zahl seyn die solchem zeichen in dem breiten reyen des nebenrands nachzusezzen ist.

	1	—a	+ab	bcd	yx	2yy
i ◎ 2	2	+aa	+aabb	bbccdd	yyxx	$4y^4$
i ◎ 3	3	$-a^3$	$+a^3b^3$	$b^3c^3d^3$	y^3x^3	$8y^6$
i ◎ 4	4	$+a^4$	$+a^4b^4$	$b^4c^4d^4$	y^4x^4	$16y^8$

◎ INVOLVED – J. H. Rahn, Teutsche Algebra, 1659.

In the time of Leibniz, the usual way of referring to curves or magnitudes is by giving equations that describe their specific relations. The concept of mapping as it is used in modern mathematics is not yet developed. Leibniz writes the signs Ⓥ and ⊡ to the right of an expression (such as x Ⓥ and $y+1$, ⊡) in order to denote two different arbitrary rules by which the expressions given in the left position are treated. The result is an expression. By this, the meaning is similar to writing $f(x)$ or $g(y+1)$ in modern mathematical notation with f and g denoting arbitrary functions.
In a similar way, Johann Bernoulli uses the sign ∞ (see L-2535/N5335R) to denote a quantity depending on variables x and a (in modern terminology a function in x and a).

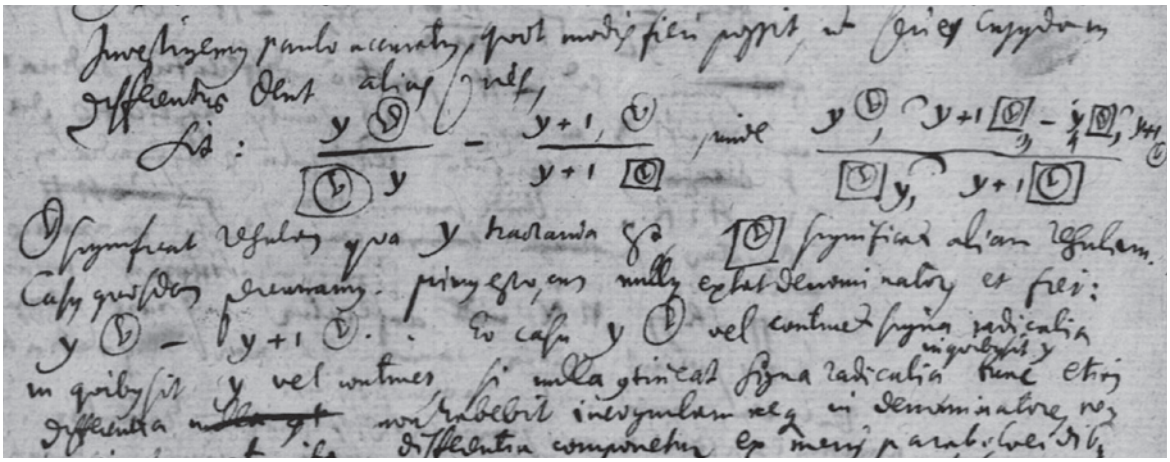

stantem numerum multiplicatam esse vel 1, vel multiplum facti ex denominatoribus duobus proximis, per numerum respondentem, ut 3. 35 etc. nempe:

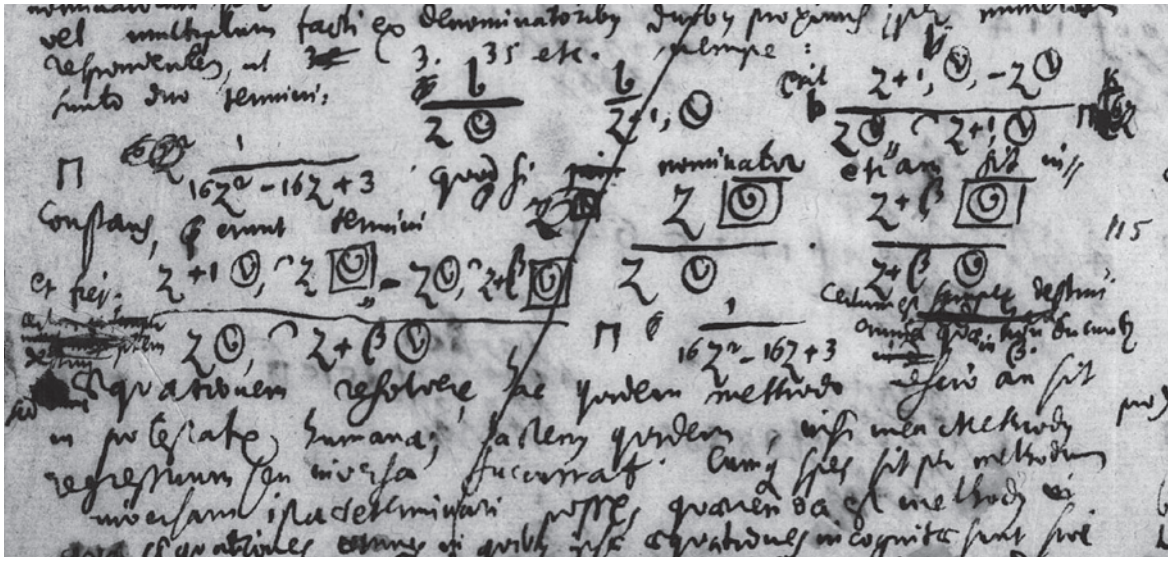
Sunto duo termini: $\frac{b}{z\,Ⓥ}$ $\frac{b}{z+1,\,Ⓥ}$ erit $b\,\frac{z+1,\,Ⓥ,\,-z\,Ⓥ}{z\,Ⓥ,,\frown z+1,\,Ⓥ}\sqcap\frac{1}{16z^2-16z+3}$. Quod si nominator etiam sit inconstans, erunt termini $\frac{z\,\boxed{Ⓥ}}{z\,Ⓥ}$. $\frac{z+\beta,\,\boxed{Ⓥ}}{z+\beta,\,Ⓥ}$ et fiet:

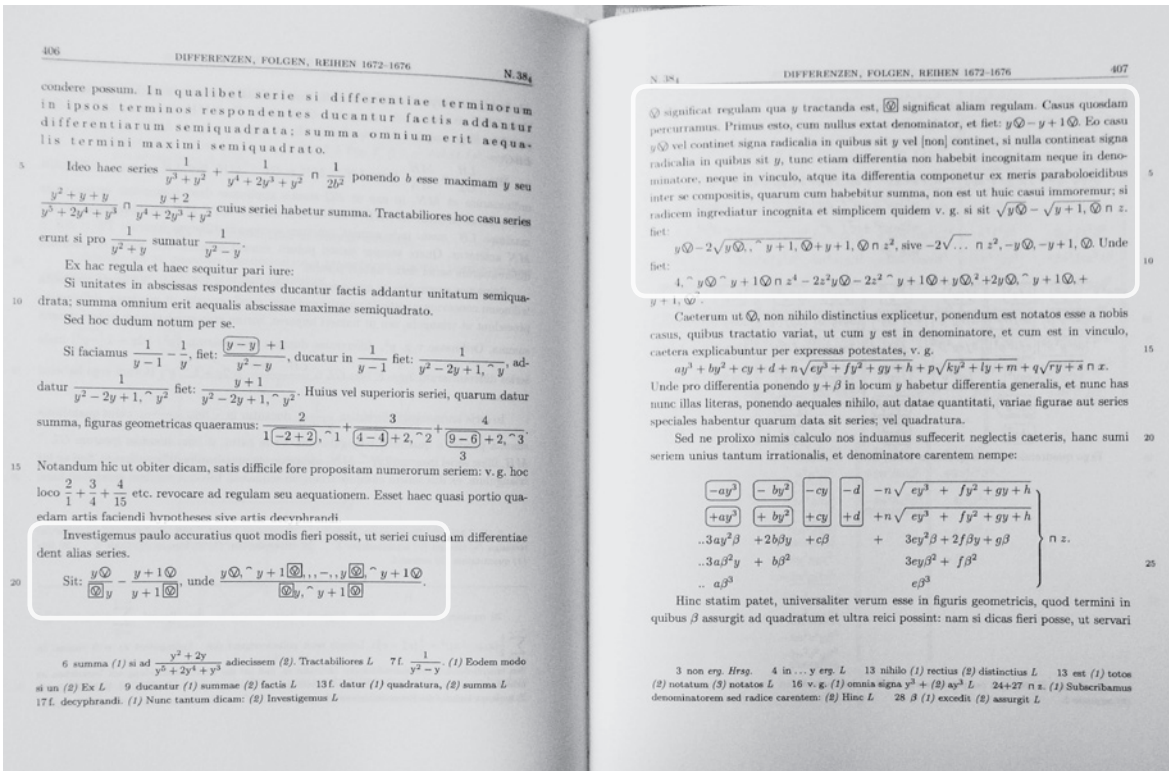
$$\frac{z+1,\,Ⓥ,\frown z\,\boxed{Ⓥ},,-z\,Ⓥ,\frown z+\beta,\,\boxed{Ⓥ}}{z\,Ⓥ,\frown z+\beta,\,Ⓥ}\sqcap\frac{1}{16z^2-16z+3}.$$

Certum est semper destrui omnia quae non ducuntur in β. Sed hanc aequationem

Ⓥ LEIBNIZIAN ENCIRCLED V, ⊡ LEIBNIZIAN ENCIRCLED V IN BOX
LAA VII-1 p. 527 (above), LH 35 V 4, fol. 6 (below), LH 35 VIII 30, fol. 115r (bottom)







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condere possum. In qualibet serie si differentiae terminorum in ipsos terminos respondentes ducantur factis addantur differentiarum semiquadrata; summa omnium erit aequalis termini maximi semiquadrato.

Ideo haec series $\frac{1}{y^3+y^2}+\frac{1}{y^4+2y^3+y^2}\sqcap\frac{1}{2b^2}$ ponendo b esse maximam y seu $\frac{y^2+y+y}{y^5+2y^4+y^3}\sqcap\frac{y+2}{y^4+2y^3+y^2}$ cuius seriei habetur summa. Tractabiliores hoc casu series erunt si pro $\frac{1}{y^2+y}$ sumatur $\frac{1}{y^2-y}$.

Ex hac regula et haec sequitur pari iure:

Si unitates in abscissas respondentes ducantur factis addantur unitatum semiquadrata; summa omnium erit aequalis abscissae maximae semiquadrato.

Sed hoc dudum notum per se.

Si faciamus $\frac{1}{y-1}-\frac{1}{y}$, fiet: $\frac{\boxed{y-y}+1}{y^2-y}$, ducatur in $\frac{1}{y-1}$ fiet: $\frac{1}{y^2-2y+1,\frown y}$, adductur $\frac{1}{y^2-2y+1,\frown y^2}$ fiet: $\frac{y+1}{y^2-2y+1,\frown y^2}$. Huius vel superioris seriei, quarum datur summa, figuras geometricas quaeramus: $\frac{2}{1\overline{-2+2},\frown 1}+\frac{3}{\overline{4-4}+2,\frown 2}+\frac{4}{\overline{9-6}+2,\frown 3}$.

Notandum hic ut obiter dicam, satis difficile fore propositam numerorum seriem: v. g. hoc loco $\frac{2}{1}+\frac{3}{4}+\frac{4}{15}$ etc. revocare ad regulam seu aequationem. Esset haec quasi portio quaedam artis faciendi hypotheses sive artis decyphrandi.

Investigemus paulo accuratius quot modis fieri possit, ut seriei cuiusdam differentiae dent alias series.

Sit: $\frac{y\textcircled{v}}{\boxed{\textcircled{v}}y}-\frac{y+1\textcircled{v}}{y+1\boxed{\textcircled{v}}}$, unde $\frac{y\textcircled{v},\frown y+1\boxed{\textcircled{v}},,,-,,y\boxed{\textcircled{v}},\frown y+1\textcircled{v}}{\boxed{\textcircled{v}}y,\frown y+1\boxed{\textcircled{v}}}$.

6 summa *(1)* si ad $\frac{y^2+2y}{y^5+2y^4+y^3}$ adiecissem *(2)*. Tractabiliores *L* 7 f. $\frac{1}{y^2-y}$. *(1)* Eodem modo si un *(2)* Ex *L* 9 ducantur *(1)* summae *(2)* factis *L* 13 f. datur *(1)* quadratura, *(2)* summa *L* 17 f. decyphrandi. *(1)* Nunc tantum dicam: *(2)* Investigemus *L*

N. 38$_4$ DIFFERENZEN, FOLGEN, REIHEN 1672–1676 407

$\textcircled{v}$ significat regulam qua y tractanda est, $\boxed{\textcircled{v}}$ significat aliam regulam. Casus quosdam percurramus. Primus esto, cum nullus extat denominator, et fiet: $y\textcircled{v}-y+1\textcircled{v}$. Eo casu $y\textcircled{v}$ vel continet signa radicalia in quibus sit y vel [non] continet, si nulla contineat signa radicalia in quibus sit y, tunc etiam differentia non habebit incognitam neque in denominatore, neque in vinculo, atque ita differentia componetur ex meris paraboloeidibus inter se compositis, quarum cum habebitur summa, non est ut huic casui immoremur; si radicem ingrediatur incognita et simplicem quidem v. g. si sit $\sqrt{y\textcircled{v}}-\sqrt{y+1,\textcircled{v}}\sqcap z$. fiet:

$y\textcircled{v}-2\sqrt{y\textcircled{v},\frown y+1,\textcircled{v}}+y+1,\textcircled{v}\sqcap z^2$, sive $-2\sqrt{\ldots}\sqcap z^2,-y\textcircled{v},-y+1,\textcircled{v}$. Unde fiet:

$4,\frown y\textcircled{v}\frown y+1\textcircled{v}\sqcap z^4-2z^2y\textcircled{v}-2z^2\frown y+1\textcircled{v}+y\textcircled{v},^2+2y\textcircled{v},\frown y+1\textcircled{v},+y+1,\textcircled{v}^2$.

Caeterum ut $\textcircled{v}$, non nihilo distinctius explicetur, ponendum est notatos esse a nobis casus, quibus tractatio variat, ut cum y est in denominatore, et cum est in vinculo, caetera explicabuntur per expressas potestates, v. g.

$ay^3+by^2+cy+d+n\sqrt{ey^3+fy^2+gy+h}+p\sqrt{ky^2+ly+m}+q\sqrt{ry+s}\sqcap x$.

Unde pro differentia ponendo $y+\beta$ in locum y habetur differentia generalis, et nunc has nunc illas literas, ponendo aequales nihilo, aut datae quantitati, variae figurae aut series speciales habentur quarum data sit series; vel quadratura.

Sed ne prolixo nimis calculo nos induamus suffecerit neglectis caeteris, hanc sumi seriem unius tantum irrationalis, et denominatore carentem nempe:

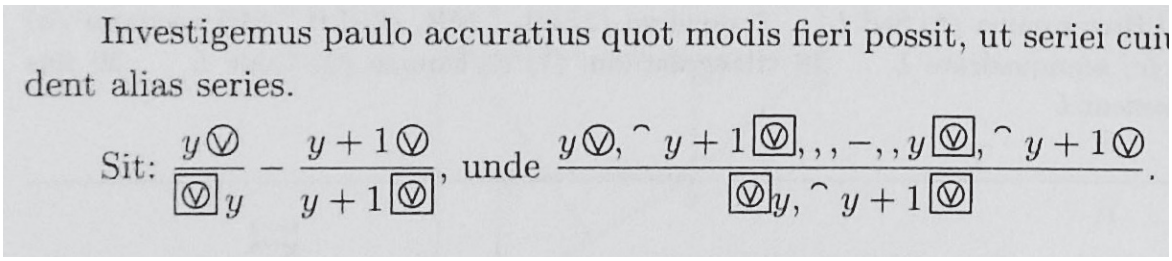
$$\left.\begin{array}{llll}
\boxed{-ay^3} & \boxed{-by^2} & \boxed{-cy} & \boxed{-d} \quad -n\sqrt{ey^3+fy^2+gy+h} \\
\boxed{+ay^3} & \boxed{+by^2} & \boxed{+cy} & \boxed{+d} \quad +n\sqrt{ey^3+fy^2+gy+h} \\
..3ay^2\beta & +2by\beta & +c\beta & + \quad 3ey^2\beta+2fy\beta+g\beta \\
..3a\beta^2y & +b\beta^2 & & 3ey\beta^2+f\beta^2 \\
..a\beta^3 & & & e\beta^3
\end{array}\right\}\sqcap z.$$

Hinc statim patet, universaliter verum esse in figuris geometricis, quod termini in quibus β assurgit ad quadratum et ultra reici possint: nam si dicas fieri posse, ut servari

3 non *erg. Hrsg.* 4 in ... y *erg. L* 13 nihilo *(1)* rectius *(2)* distinctius *L* 13 est *(1)* totos *(2)* notatum *(3)* notatos *L* 16 v. g. *(1)* omnia signa $y^3+(2)$ ay^3 *L* 24+27 $\sqcap$ z. *(1)* Subscribamus denominatorem sed radice carentem: *(2)* Hinc *L* 28 β *(1)* excedit *(2)* assurgit *L*

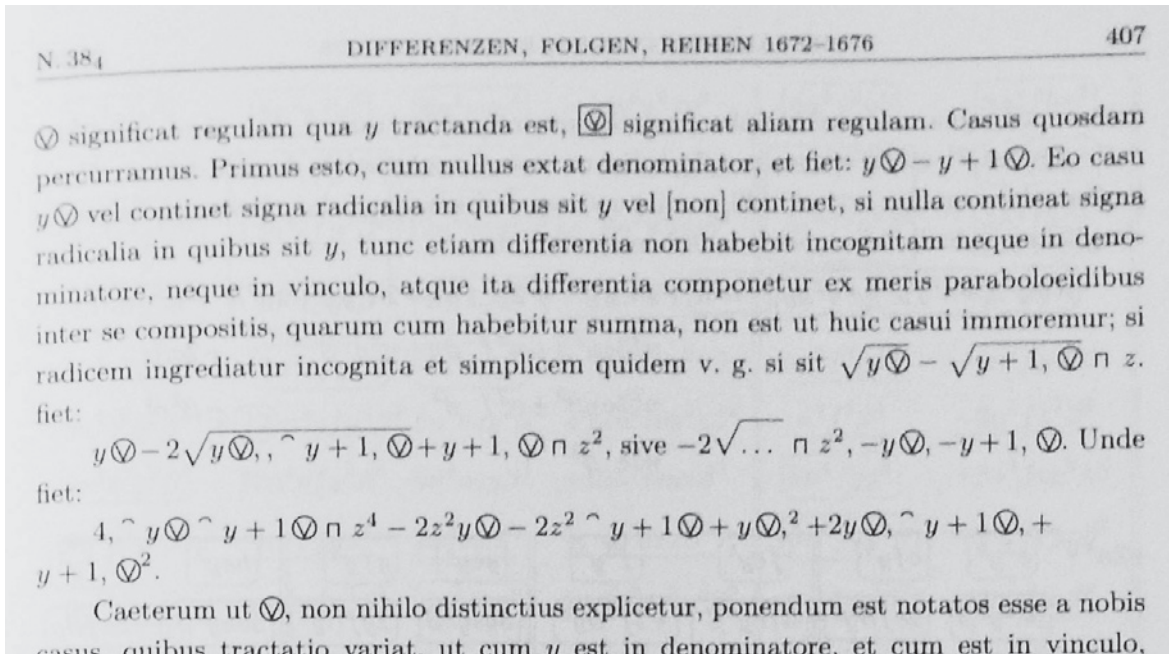
$\textcircled{v}$ LEIBNIZIAN ENCIRCLED V, $\boxed{\textcircled{v}}$ LEIBNIZIAN ENCIRCLED V IN BOX

The typographical solution for these characters in the edition is unfortunate. In fact the round shape has to be connected with the *v*, similar as in @ (0040). – LAA VII-3 p. 406-407



Investigemus paulo accuratius quot modis fieri possit, ut seriei cui
dent alias series.

$$\text{Sit: } \frac{y\textcircled{v}}{\boxed{\textcircled{v}}y}-\frac{y+1\textcircled{v}}{y+1\boxed{\textcircled{v}}}, \text{ unde } \frac{y\textcircled{v},\frown y+1\boxed{\textcircled{v}},,,-,,y\boxed{\textcircled{v}},\frown y+1\textcircled{v}}{\boxed{\textcircled{v}}y,\frown y+1\boxed{\textcircled{v}}}.$$



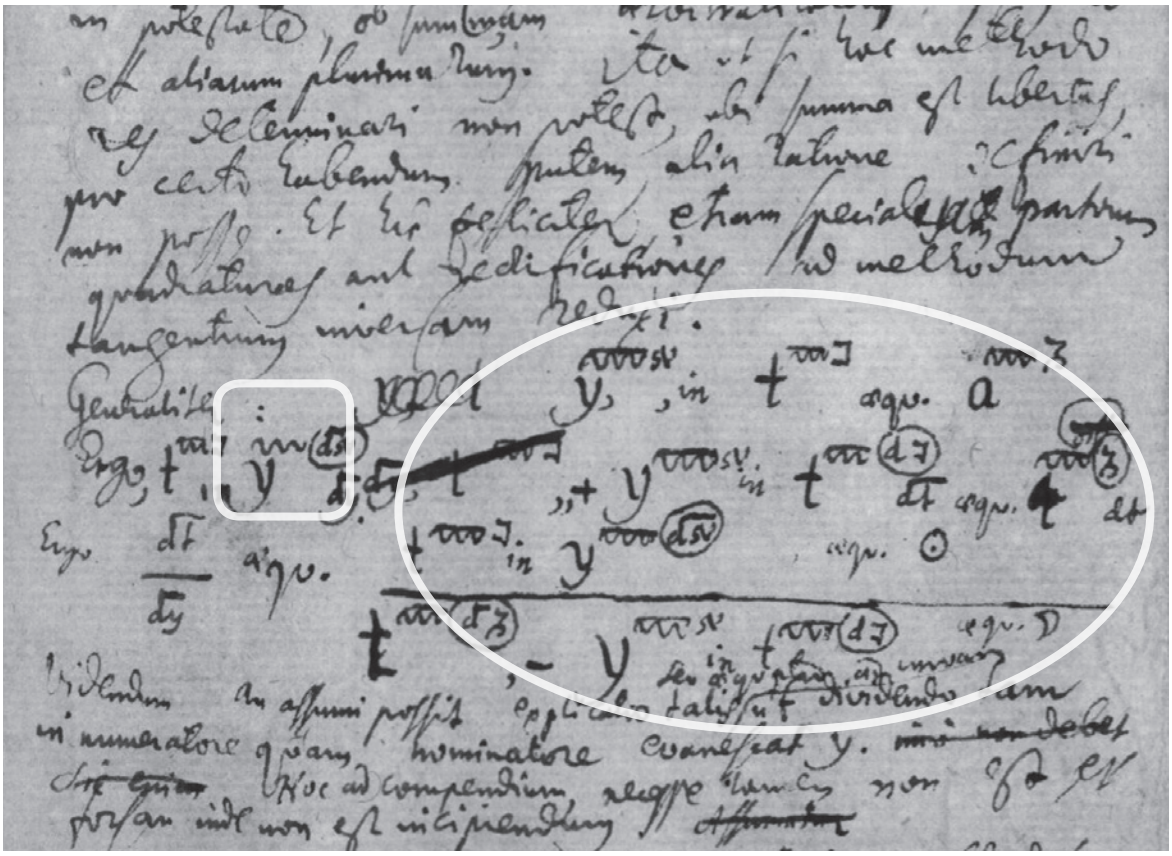
N. 38$_4$ DIFFERENZEN, FOLGEN, REIHEN 1672–1676 407

$\textcircled{v}$ significat regulam qua y tractanda est, $\boxed{\textcircled{v}}$ significat aliam regulam. Casus quosdam percurramus. Primus esto, cum nullus extat denominator, et fiet: $y\textcircled{v}-y+1\textcircled{v}$. Eo casu $y\textcircled{v}$ vel continet signa radicalia in quibus sit y vel [non] continet, si nulla contineat signa radicalia in quibus sit y, tunc etiam differentia non habebit incognitam neque in denominatore, neque in vinculo, atque ita differentia componetur ex meris paraboloeidibus inter se compositis, quarum cum habebitur summa, non est ut huic casui immoremur; si radicem ingrediatur incognita et simplicem quidem v. g. si sit $\sqrt{y\textcircled{v}}-\sqrt{y+1,\textcircled{v}}\sqcap z$. fiet:

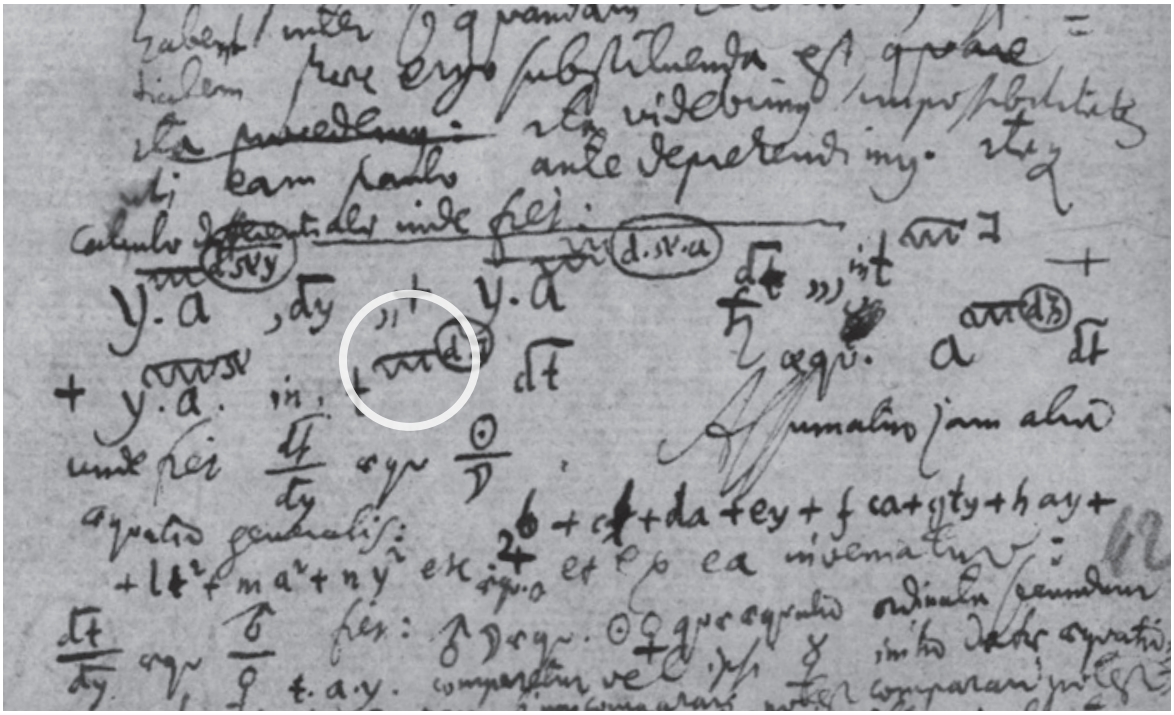
$y\textcircled{v}-2\sqrt{y\textcircled{v},\frown y+1,\textcircled{v}}+y+1,\textcircled{v}\sqcap z^2$, sive $-2\sqrt{\ldots}\sqcap z^2,-y\textcircled{v},-y+1,\textcircled{v}$. Unde fiet:

$4,\frown y\textcircled{v}\frown y+1\textcircled{v}\sqcap z^4-2z^2y\textcircled{v}-2z^2\frown y+1\textcircled{v}+y\textcircled{v},^2+2y\textcircled{v},\frown y+1\textcircled{v},+y+1,\textcircled{v}^2$.

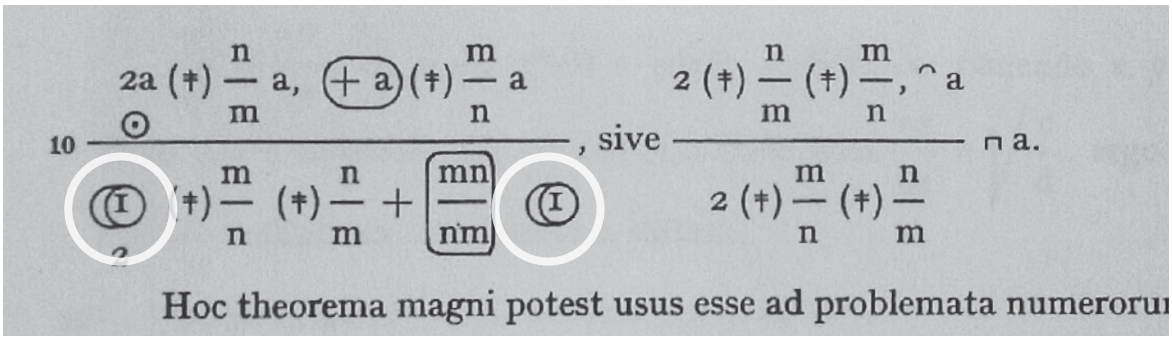
Caeterum ut $\textcircled{v}$, non nihilo distinctius explicetur, ponendum est notatos esse a nobis casus, quibus tractatio variat, ut cum y est in denominatore, et cum est in vinculo,



∿ HORIZONTAL WAVY LINE, ∿̄ HORIZONTAL WAVY LINE WITH BAR ABOVE
Leibniz uses these symbols mainly in a superscript mode, for which the appropriate math layout functionality shall be applied to the WAVY characters.
LH 35 VII 1, fol. 39r. *The edition of this manuscript is currently in progress*.



∿̄ HORIZONTAL WAVY LINE WITH BAR ABOVE
LH 35 VII 1, fol. 41v. *The edition of this manuscript is currently in progress*.



⑴ LUNATE ENCIRCLED DIGIT ONE
LAA VII-1 p. 472

5. Unicode Character Properties

```
1DB22;CASTING OUT NINES;Sm;0;ON;;;;;N;;;;;
1DB23;LUNATE ENCIRCLED DIGIT ONE;Sm;0;ON;;;;;N;;;;;
1DB24;PROPORTION WITH ONE STROKE;Sm;0;ON;;;;;N;;;;;
1DB25;PROPORTION WITH TWO STROKES;Sm;0;ON;;;;;N;;;;;
1DB26;INFINITY WITH TWO DOTS;Sm;0;ON;;;;;N;;;;;
1DB27;INVOLVED;Sm;0;ON;;;;;N;;;;;
1DB28;LEIBNIZIAN ENCIRCLED V;Sm;0;ON;;;;;N;;;;;
1DB29;LEIBNIZIAN ENCIRCLED V IN BOX;Sm;0;ON;;;;;N;;;;;
1DB2A;HORIZONTAL WAVY LINE;Sm;0;ON;;;;;N;;;;;
1DB2B;HORIZONTAL WAVY LINE WITH BAR ABOVE;Sm;0;ON;;;;;N;;;;;
```

6. Bibliography

LAA – refers to: Leibniz, Gottfried Wilhelm: Sämtliche Schriften und Briefe. (‘Leibniz-Akademie-Ausgabe’, many volumes)
LH – refers to: Leibniz’s original manuscripts, GWLB Hanover

Bombelli, Rafael: L’Algebra. Bologna 1579
— : L’Algebra. Milan 1966
Cajori, Florian: A history of mathematical notations. Chicago 1928
Probst, Siegmund: Édition des symboles de Leibniz. PDF. Hanover 2023 (presentation Paris 2023)
Rahn, Johann Heinrich: Teutsche Algebra. Zurich 1659
Rinner, Elisabeth: List of glyphs in Leib.mf. PDF. Hanover 2022
Rudolph, Christoph [or Christoff]: Kunstliche Rechnung. Augsburg 1574 or 1588; A VIII.

☞ *online*

Leibniz-Akademie-Ausgabe (LAA, general edition of Leibniz’s writings)

LAA series VII (mathematical manuscripts, volumes 3 to 7 available online)

ISO/IEC JTC 1/SC 2/WG 2
PROPOSAL SUMMARY FORM TO ACCOMPANY SUBMISSIONS
FOR ADDITIONS TO THE REPERTOIRE OF ISO/IEC 10646[1]
Please fill all the sections A, B and C below.
Please read Principles and Procedures Document (P & P) from http://std.dkuug.dk/JTC1/SC2/WG2/docs/principles.html **for guidelines and details before filling this form.**
Please ensure you are using the latest Form from http://std.dkuug.dk/JTC1/SC2/WG2/docs/summaryform.html **.**
See also http://std.dkuug.dk/JTC1/SC2/WG2/docs/roadmaps.html **for latest *Roadmaps*.**

A. Administrative

1. **Title:** **Proposal to encode miscellaneous symbols**
2. Requester's name: Uwe Mayer, Siegmund Probst, David Rabouin, Elisabeth Rinner, Andreas Stötzner, Achim Trunk, Charlotte Wahl
3. Requester type (Member body/Liaison/Individual contribution): Individual (work group)
4. Submission date: 2026-10.08.
5. Requester's reference (if applicable): LUCP L-2629
6. Choose one of the following:
   This is a complete proposal: Yes
   (or) More information will be provided later:

B. Technical – General

1. Choose one of the following:
   a. This proposal is for a new script (set of characters): No
      Proposed name of script:
   b. The proposal is for addition of character(s) to an existing block: (Yes)
      Name of the existing block: 1DB00 Miscellaneous Symbols and Arrows Extended
2. Number of characters in proposal: 10
3. Proposed category (select one from below - see section 2.2 of P&P document):
   A-Contemporary B.1-Specialized (small collection) Yes B.2-Specialized (large collection)
   C-Major extinct D-Attested extinct E-Minor extinct
   F-Archaic Hieroglyphic or Ideographic G-Obscure or questionable usage symbols
4. Is a repertoire including character names provided? Yes
   a. If YES, are the names in accordance with the "character naming guidelines" in Annex L of P&P document? Yes
   b. Are the character shapes attached in a legible form suitable for review? Yes
5. Fonts related:
   a. Who will provide the appropriate computerized font to the Project Editor of 10646 for publishing the standard?
      Andreas Stötzner
   b. Identify the party granting a license for use of the font by the editors (include address, e-mail, ftp-site, etc.):
      Andreas Stötzner Gestaltung, Klauflügelweg 21, 88400 Biberach/R., Germany, as@signographie.de
6. References:
   a. Are references (to other character sets, dictionaries, descriptive texts etc.) provided? Yes
   b. Are published examples of use (such as samples from newspapers, magazines, or other sources) of proposed characters attached? Yes
7. Special encoding issues:
   Does the proposal address other aspects of character data processing (if applicable) such as input, presentation, sorting, searching, indexing, transliteration etc. (if yes please enclose information)? No

8. Additional Information:
Submitters are invited to provide any additional information about Properties of the proposed Character(s) or Script that will assist in correct understanding of and correct linguistic processing of the proposed character(s) or script. Examples of such properties are: Casing information, Numeric information, Currency information, Display behaviour information such as line breaks, widths etc., Combining behaviour, Spacing behaviour, Directional behaviour, Default Collation behaviour, relevance in Mark Up contexts, Compatibility equivalence and other Unicode normalization related information. See the Unicode standard at http://www.unicode.org for such information on other scripts. Also see Unicode Character Database (http://www.unicode.org/reports/tr44/) and associated Unicode Technical Reports for information needed for consideration by the Unicode Technical Committee for inclusion in the Unicode Standard.

[1] Form number: N4502-F (Original 1994-10-14; Revised 1995-01, 1995-04, 1996-04, 1996-08, 1999-03, 2001-05, 2001-09, 2003-11, 2005-01, 2005-09, 2005-10, 2007-03, 2008-05, 2009-11, 2011-03, 2012-01)

C. Technical - Justification

1. Has this proposal for addition of character(s) been submitted before? Yes

   If YES explain *see N5336 (L-2621, L-2607, L-2604, L-2536, L-2521); N5277 (L-2402n)*

2. Has contact been made to members of the user community (for example: National Body, user groups of the script or characters, other experts, etc.)? Yes

   If YES, with whom? Leibniz-Archiv, Forschungsstelle der Leibniz-Edition, Niedersächsische Landesbibliothek (GWLB), Hanover, Göttingen Academy of Science and Humanities in Lower Saxony (DE), Philiumm research group of CNRS (UMR 7219, laboratoire SPHERE) / Université de Paris VII; general: scholars, researchers, authors and editors working in the field of science history and upon editions of historic text corpora (e.g. of G. W. Leibniz, but also many others)

   If YES, available relevant documents: L-2409, L-2410

3. Information on the user community for the proposed characters (for example: size, demographics, information technology use, or publishing use) is included? Yes

   Reference:

4. The context of use for the proposed characters (type of use; common or rare) Common

   Reference: mainly specialist usage, scholarly, worldwide

5. Are the proposed characters in current use by the user community? Yes

   If YES, where? Reference: mainly Europe, Americas; other countries

6. After giving due considerations to the principles in the P&P document must the proposed characters be entirely in the BMP? No

   If YES, is a rationale provided?

   If YES, reference:

7. Should the proposed characters be kept together in a contiguous range (rather than being scattered)? No

8. Can any of the proposed characters be considered a presentation form of an existing character or character sequence? No

   If YES, is a rationale for its inclusion provided?

   If YES, reference:

9. Can any of the proposed characters be encoded using a composed character sequence of either existing characters or other proposed characters? No

   If YES, is a rationale for its inclusion provided?

   If YES, reference:

10. Can any of the proposed character(s) be considered to be similar (in appearance or function) to, or could be confused with, an existing character? No

    If YES, is a rationale for its inclusion provided?

    If YES, reference:

11. Does the proposal include use of combining characters and/or use of composite sequences? No

    If YES, is a rationale for such use provided?

    If YES, reference:

    Is a list of composite sequences and their corresponding glyph images (graphic symbols) provided? No

    If YES, reference:

12. Does the proposal contain characters with any special properties such as control function or similar semantics? No

    If YES, describe in detail (include attachment if necessary)

13. Does the proposal contain any Ideographic compatibility characters? No

    If YES, are the equivalent corresponding unified ideographic characters identified?

    If YES, reference: