(1) division de [A0] par [A1]   [A0] = [A2]^s * [A1] + [A3]^s

A3 reste, A2 quotient, libre

```
XDIV1 : CMP    #$4000,(A1)
        BEQ    ERRDV

XDIV1 : MOVE.L  A0,A4          1919,0
        MOVE.L  A1,A5
        BSR     XCMP1          cmp [A1],[A0]
        MOVE.L  A4,A0
α       BCS     KA92           -> [A0] < [A1]   mettre [A0]; 0
β       BEQ     KA93           -> [A0] = [A1]   mettre 0; 1
                               ↓ [A0] > [A1]
        MOVE.L  A5,A1
entrée pour B1ed
XDIV1A :MOVE    (A1)+,D1       <- il faut que A0^e = A4^e, A1^e = A5^e pour bon fonctionnement
        AND     #$5FFF,D1
        BCLR    #14,D1
        BEQ     KA81           -> [A1] long
⊗ KA74 :CMP     #1,D1
γ       BEQ     KA94           -> division par 1   mettre 0; [A0]

                ⊗ { BNE   KA74    -> [A1] court
                    CMP   #2,D1
                    BNE   KA81    -> [A1] long
                    MOVE  (A1),D1 }

        MOVE    (A0)+,D0
        AND.L   #$5FFF,D0
        BCLR    #14,D0
        BNE     KA76           -> [A0] court : diviser D0.L / D1.W
        CMP     #2,D0
        BNE     KA77           -> [A0] long  diviser D1.W
        MOVE    (A0)+,D0
KA76 :  DIVU    D1,D0
        SWAP    D0
        BSR     XPOSED0  <- MOVE.L A2,A3
        SWAP    D0
        BRA     XPOSED0
```

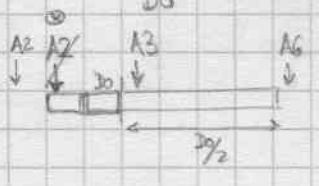
```
KA77:MOVE.L  A6,A3
     MOVE.L  A3,A2
     MOVE.L  D0,(A3)+
     MOVE.L  A3,A6
     ADD     D0,A6
     VERA6

     MOVE    D0,D2
     ASR  #1,D2
     SUBQ #1,D2
     CLR.L   D3
     MOVE    (A0)+,D3
     DIVU    D1,D3
     TST     D3
     BNE     KA79
     SUBQ #2,-2(A3)
     SUBQ #2,A6
     BRA     KA80
KA78:MOVE    (A0)+,D3
     DIV.U   D1,D3

KA79:MOVE    D3,(A3)+
KA80:DBRA    D2,KA78
     SWAP    D3
     MOVE.L  A2,A3
     BSET    #14,D3
     MOVE    D3,(A2)+
     CMP  #2,(A2)
     BEQ     KA38
     RTS
```

⊗

```
KA77:MOVE.L  A6,A2
     LEA     4(A2),A3
     ADDQ #4,A3
     MOVE    D0,(A3)+
```

⊗

divise [A0]long par D1.W
D0




```
     CMP  #$2000,D3
     BCS     KA800
     MOVE #2,(A2)+
     MOVE    D3,(A2)+
     BRA     KA801

KA800:BSET   #14,D3
     MOVE    D3,(A2)+
     MOVE.L  A2,A0
     ADDQ #2,A2
     BSR     XLB76
     LEA  2(A3),A2
KA801:CMP    #2,(A2)
     BEQ     KA38
     RTS
```

① divise [A3](A0) par [A5](A1) ← descr
D0 D1 ← longueurs

KA81 : MOVE (A0),D0 ← AND #$1FFF, D0
MH170: MOVE (A1),D3

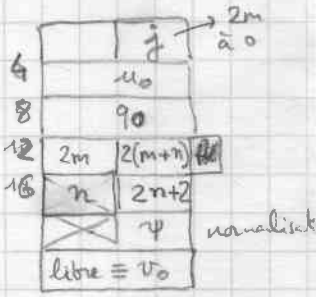
(D1) Normalise

MOVEQ #-1,D2

MH71: ADDQ #1,D2
ADD D3,D3
BCC MH71
MOVE.L A6,A3
MOVEM.L D0/D1/D2 /A6,-(SP)

MOVE D1,D3
ASR #1,D1
ADDQ #2,D3 ← SWAP D1 ⊗
MOVE D3,D1
ADDQ #2,D0

facteur de normalisation : 2^{D2}
$0 \leqslant D2 \leqslant 15$



MOVE.L A5,A0

BSR XROT (D91 pose diviseur 2^{D2} (v)

MOVE.L A4,A0

BSR XROT pose dividende
MOVE.L A2,A1
MOVEM.L (SP),D0/D1 met A2 sur u_0

MOVE (A2)+,D2
AND #$1FFF,D2
CMP D2,D0
BCC MH72
CLR -(A2)

MH72: ~~MOVE.L (SP),D0/D1~~
~~CLR -(SP)~~
CLR (A3)+
MOVE (A3) D6
MOVE.L (A3), D5

$v_0 = 0$
D6.W = v_1
D5.W = v_2
D5.L = $v_1 b + v_2$

(D2) MHR: SUB D1,D0
Q #2,D0
MOVEM.L D0/A2/A6,-(SP)
ADD D0,A6
.BSR VERA6
SUB D0,A6

2(m+n) 2n+2
MOVE D0,(SP)

(D3) A2 sur u_j
A1 après v_n
A6 en libre pour q_j

MH73: MOVEQ #-1,D4
CMP (A2),D6
BEQ MH74
MOVE.L (A2),D4

D4 = $b-1$

D4 = $u_j b + u_{j+1}$

DIVU D6,D4
MOVE.L D4,D3
~~MOVE 4(A2),D3~~

D4 = [r | q̂]

~~D3.L = $(u_j b + u_{j+1} - \hat{q} v_1) b + u_{j+2}$~~

BRA MH75

MH74: MOVE.L (A2),D3
ADD D6,D3
BCS MH77
SWAP D3

si $u_j = v_1$ $\hat{q} = b-1$ $r = v_1 + u_{j+1}$

→ $r > b$
D3.L = [r | ⊠]
D3.L = [r | u_{j+2}] = $(u_j b + u_{j+1} - \hat{q} v_1) b + u_{j+2}$

MH75: MOVE 4(A2),D3
MOVE D5,D0
MULU D4,D0
SUB.L D0,D3
BCC MH77

D0.L = $v_2 \hat{q}$

(1) $\hat{q} \to \hat{q}-1$

```
MH76 : SUBQ  #1, D4
       ADD.L D5, D3
       BCC   MH76
```

nouveau D3 : $D3 = D3 + \underbrace{v_1 b + v_2}_{D5}$

```
MH77 : MOVEM 16(SP), D2/D3        n  2n+2
       MOVE.L A2, A3
       ADD    D3, A3        A3 après u_{j+n}
       MOVE.L A1, A0        A0 après v_n
       MOVEQ  #0, D0                ⊗
       MOVEQ  #0, D3
MH78 : MOVE   -(A0), D1
       MULU   D4, D1
       SUB.L  D1, D0
       MOVE   -(A3), D3
       ADD.L  D3, D0
       MOVE   D0, (A3)
       CLR    D0
       SWAP   D0
       DBRA   D2, MH78  ← ADDQ #1, (A3)
       TST.L  D0
X      BEQ    MH81
```

cas $\hat{q}$ trop grand

```
       SUBQ #1, D4          n  2n+2   )X=0
       MOVEM 16(SP), D2/D3
       MOVE.L A2, A3
       ADD    D3, A3
       MOVE.L A1, A0
```

```
MH80 : ADDX -(A0), -(A3)
       DBRA  D2, MH80
MH81 : MOVE   D4, (A6)+
       MOVE.L (SP)+, D0
       SUBQ  #2, D0
       BMI   MH82
       MOVE.L D0, -(SP)
       ADDQ  #2, A2
       BRA   MH73
```

TST (A3) ~~BNE ERRFAT~~

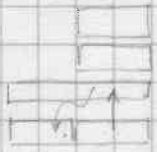
9j

→ fin

D4 soustraire à $(u_j \dots u_{j+n})_b$ plus $\hat{q}(v_1 \dots v_n)$

$D0 < b$

$D1 \leqslant (b-1)^2$



correction
Voir page 50.3a

D5 carry ?

D6 add back

D7 $j = j+1$

① Correction à p 50.3

```
        MOVEQ  #0,D0
MH78:   MOVE   -(A0),D1
        MULU   D4,D1
        ADD.L  D0,D1
        SUB    D1,-(A3)
        BCC    MH79
        ADDQ.L #1,D0
MH79:   DBRA   D2,MH78
        TST.L  D0
```

$d_0 \leq b$

$d_1^2 \leq (b-1)^2 + b = b^2 - b + 1$

$d_1^2 \leq$ FFFF0001

```
MOVE.L  D1,D0
CLR     D0
SWAP    D0
```

```
MH82: MOVE.L (SP)+, A1        u0
      MOVE.L 16(SP), D1
      ASR #1,D1
      BSR XPOSEA1             pose r 2^D3 en A2
      MOVE.L A2,A0
      MOVEM.L 12(SP), D2/A6   Ψ libre
      NEG D2
      BSR XROT
      MOVE.L (SP)+, A1        q0
      MOVE (SP)+, D1          2m
      ASR #1,D1
      BSR XPOSEA1             [q] en A2
      ADD #10,SP
      MOVE.L (SP)+, A3        [r] en A3
      RTS
```

α KA92: BSR XPOSE1 ← ~~BCLR #1,(A2)~~
MOVE.L A2,A3
BRA XPOSE2

A3 A2
mot [A0] ; 0

β KA93: BSR XPOSE2
MOVE.L A2,A3
XPOSEUN: MOVEQ #1,D0
BRA XPOSEDO

A3 A2
mot 0 ; 1

γ KA94: BSR XPOSE2
MOVE.L A2,A5
BSR XPOSE1 ← ~~BCLR #1,(A2)~~
MOVE.L A5,A3
RTS

A3 A2
mot 0 ; [A0]

ERRDV: MOVE #2,D0
BRA RER

Recherche et pose

en A2 libre

détruit D0, D1, D2
A1' = après la zone

```
XPOSEA1: MOVE  (A1)+,D0
         BNE   KB10
         DBRA  D1,XPOSEA1
         ↓ [A1]=0
         BRA   XPOSEZ
KB10:    TST   D1
         BEQ   XPOSED0
         MOVE.L  A6,A2
         MOVE  D1,D2
         ADDQ  #1,D2
         ADD   D2,D2
         MOVE  D2,(A6)+
         ADD   D2,A6
         VERA6
         LEA   2(A2),A6
         MOVE  D0,(A6)+
         SUBQ  #1,D1
KB11:    MOVE  (A1)+,(A6)+
         DBRA  D1,KB11
         RTS
```

pose D0