1 MAPPET: Music Analysis Software Package

\MAPPET\

1 Summary

MAPPET: Music Input, Analysis and Playback Programme for ESAC
Transcriptions – this is the name of a set of programs developed
at Essen University for analysis and manipulation of one-part
melodies in ESAC (Essen Associative Code)1).

Originally the input-part of MAPPET was developed for Micro-
Computers while the analysis-parts could only be performed in
mainframe computers. The present version runs completely on any
IBM (compatible) Micro using MS/DOS. Any output is prepared for
use in AskSam-databases, but there is also a "neutral" version
with numbers instead of mnemonics that can be used in any program.
AskSam-versions only use ASCII-Codes. The following graph explains
the configuration of MAPPET:

  \MAPPCON\

MAPPET: integrates the following single programs for the user's
     convenience. Any program can be called from a menu. Short
     explanations can be chosen by the F1-key. Melody files that
     should be used by different MAPPET programs can be named using
     the function key F2 for any of those programs.

MIDI-Input: can be used to play in one-part melodies on a MIDI-
     keyboard. They are automatically translated into ESAC and the

complete documents are stored as AskSam-Documents.

SYNtax: controls syntax and formatting of ESAC melodies and prints
a list containing line numbers and explanations.

PLAY: plays back ESAC melodies either via MIDI-keyboard or via the
computer's generator. When you choose the generator, you also
can listen to the songs in any of five different temperaments.

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1) cf. Schaffrath/Jesser: Encoding Music with ESAC, Essen 1987

ANAlysis: provided there are no mistakes (use SYNtax!) ANAlysis
provides 12 options for analyzing melodic attributes. The
results (including the previously written data) are stored in
a file that has special features for AskSam-databases. One can
choose any   of   the   12   parameters (alternatively   or
cumulatively).

TRANS: this program translates AskSam files into "neutral" STAIRS
files, which contain line-numbers instead of German or English
mnemonics. Thereby one can transfer one's data between the two
languages, because the originally English file can now be re-
translated into German mnemonics and vice verse. One should,
however, only translate unanalyzed files if possible2).

The following paragraphs describe the single programs. If you use
MAPPET, you do not have to call the specific program. Restrictions
in the length of melodies and further paragraphs will be described
along with the respective programs. After storing new data files,
either by MIDI-Input or by typing on the computer's keyboard, we
strongly recommend that you use the SYNtax program before you call
ANAlysis. You then have a chance to correct the mistakes first.
Use the PLAY-program for proof-reading (proof-listening). It can
also be used to play back any result of an (ASCII-coded) database
search3). Further mistakes will only be detected by the ANAlysis
program. ANAlysis controls the number of notes (beats) within the
bar. If this is not correct, an error message will be printed on
the screen. One should in any case first correct these mistakes
and repeat the analysis, for any incorrect bar can cause several
analytical results to be wrong.

The programs reserve some specific file types, but any other type

can be used. The file type of unanalyzed AskSam files is .SM, the type of analyzed files is .SAM.

The programs also function when there are documents without melodies. This can happen when one uses the same database for tape (or record-) protocols as for storing melodies. The single paragraphs must, however, consist only of the respective mnemonics. Otherwise the program will try to read a melody and either writes many error messages or collapses.

Any program can be started by hitting the F9-key. In most cases they can be interrupted by <ESC> or aborted by <CTL-C> <CTL-Pause> respectively.

Provided the path is defined one can begin any program from any directory. It is therefore reasonable to use the directory where one has stored the data files and to start any program from there.

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2) There is the program "STRIP" (at this moment only a German version) which can "de-analyze" the files.
3) it also can play analyzed documents.

2. MIDI-Input

2.1 Usage

One can input one-part melodies using a synthesizer. The melody
will be translated into ESAC and stored in a datafile. At the same
time verbal information on the songs/melodies can be stored. The
system was developed to store ethnomusicological material under
certain conditions. The format of the output files follows the
format of the input files for many Essen databases as LIED, BALL,
LIAO etc.

The program was not designed to copy exactly what has been played
(as is the case with many commercional sequencer programs) but
tries to find the most correct way of notation a melody using
conventional staff notation. It was intended to develop software
that translates traditionally notated music in a machine-readable
code. Quite a few "irregularities" for the input of melodies have
been empirically tested. MIDI-Input tries to adapt those
irregularities to the original notation.

2.2 The Program

From MIDI-signals those parameters are selected and stored which
can be encoded in ESAC: Pitch and dynamics4). Since it is not
possible to store tone-lengths directly, we used the pulses which
are sent from the MPU (internal clock and clock to host). We
thereby store the respective (system-) time at the beginning and
at the end of every single tone. As long as the melodies are not

in free meter the bar accents (represented by a high beep tone of the MPU-metronome) are also stored in system time.

A sub program now computes the tone-length belonging to the respective pitches and corrects "irregularities" under different aspect:

- a smaller duration than the "smallest metrical unit" which had been chosen by the user will not be stored.

- upbeats and repetitions of short tones which mostly are performed too short are prolonged.

- bars (i.e. two BLANKS in ESAC) are added in melodies of constant meter. The rhythmical values are now adapted to the bars as far as possible.

- should one have sounded two tones 'simultaneously' then the secondly played tone will be deleted. This is of special importance when the player has chosen a particularly "legato" manner of performance. When the "second voice" contains only small durations, they are also deleted.

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4) "dynamics", because we used a synthesizer that controls "NOTE-OFF" via dynamics. Other methods or synthesizers are also considered, however.

If there are distinct overlap, unidentifable pitches or durations, then the program writes error messages to inform the user that some corrections may be necessary.

Then a sub-program translates the corrected MIDI-code into ESAC symbols and prints the result in a specific editor on the screen. Simultaneously the melody is played again, because it still can contain user- or program-caused mistakes. One now can correct the melody and define the length of phrases. When there are too many mistakes, one should perhaps use the option to play the melody again.

Finally one can read the melody along with any previously stored verbal information in a complete document. In this stage further corrections are not possible (use another editor!).

2.2.1 Details

Files: The program writes text-files of variable record length.

Initialising the MPU: the following parameters are used by the MPU:

TIMEBASE	$C8	(= 192 internal pulses per beat)
CLOCK TO HOST	$E7	(= results into 192 pulses per
	$04	beat to the computer)

This allows a very high resolution of the incoming signals. Variable, i.e. changeable by the user, are the following commands:

```
    SET TEMPO          $E0  (takes the value to be regulated. The
                              default value is 64 per quarter.)
    MIDI/METRO         $E4  (takes the value of the denominator,
                              i.e. the "beep-rate" of the metro-
                              nome)
    METRO/MEAS         $E6  (takes the value of the numerator,
                              i.e the beat)
```

2.2.2 Restrictions

The program restricts the input of melodies according to the
following rules:

- the ambitus is C - b'''. Depending on the governing key in ESAC
    this equals --1 to ++7 for tonic C, -2b to ++1 for tonic
B

    respectively etc.

- the smallest metrical unit is 1/32. In this case minor
    inaccuracies are possible, however.

- Triplets and the like cannot be played. We recommend you omit
    one tone from triplets and add it along with the brackets when
    the melody is edited.

- Songs in FREE METER and songs containing changes of meter can
  only be played without accented tones. Double BLANKS
  representing the bar have to be added manually in the editor.

- tonic "1" is always in the one-line octave.

- only songs containing a maximum of 20 melody lines (phrases) can
  be played. Larger melodies have to be copied from documents
  using another editor. One can also enlarge verbal information
  in any other editor.

2.2.3 Hardware requested

The compiled software MIDI-Input runs on any IBM XT/AT
(compatible). A Roland Interface (MPU-IPC) and a sythesizer are
also needed.

2.3 Rules of usage

2.3.1 Input Rules

Program calls: One calls the program directly by typing "MIDI".

File names: The program asks for a name of up to eight characters.
The file-type (.SM) is automatically added to guarantee
compatibility especially with the PLAY program. It is, however,
possible to use any different type.

When the respective file name already exists, one can add, overwrite or choose another name. Then the program asks for the document's name (maximum is 9 digits), which will be valid for the entire data file. One is also asked for the respective source mnemonic (a single letter).

A very simple example is the following:

FILE NAME:
Lieder   <return>
DOCUMENT NAME
Frauen   <return>
SOURCE
F   <return>

Should one intend to add pieces to an existing file, the document's name and the source code are not requested again.

Input mask: The verbal informations are written into a mask which contains the maximum length for running text lines. Hit <return> at the end of any line to save your input. You cannot correct a
line that has been saved by <return>, because you are not using an editor. The paragraph names (or fields) TITLE, REGION, TRD, FCT

and REM may contain any ASCII-code5). The lines can also remain
empty. An equal (=) sign at the beginning of any line following
the paragraph repeats the text of the preceeding line
automatically. This was programmed because when one inputs songs,
the first line and the title of the song may be identical.

The following rules are important for the last lines:

NUMBER: Numbers up to four digits
VARIANT: one further ASCII-sign (may be dropped)
KEY: two digits for # (sharps) and b (flats) which have to be
          placed after the key note
METER: numeric (except for FREE); input without fraction stroke
          (i.g. 34 instead of 3/4, for example). Up to three
          different meters can be used. They must be separated by
          one BLANK. FREE meter can be shortened by FR .
SH NOTE (Shortest note): numeric, maximum two digits. Only the
          denominator of the smallest unit should be written (for
          example 4 for quarter notes). Only durations from half to
          1/32 are allowed.

If one violates any of the above mentioned rules, the program
prompts until you give a correct answer (watch the bottom line!).

Example for a ready mask (German female song):


```
          +----------------------------------------------+
TITLE:    ¦Der Mann das ist ein Lustobjekt               ¦
          ¦Mein Freund steht auf dem Fussballplatz       ¦
          ¦und ich steh in der K}che.                    ¦
```

```
REGION     |Bundesrepublik Deutschland                       |
SOURCE     |Quelle: Frauenliederbuch, Dortmund 1986          |
           |Musik: Angy Domdey                               |
FUNCTION:  |Frauen - Lied                                    |
           |                                                 |
COMMENTS:  |gekuerzt                                         |
           |                                                 |
NUMBER:    |1                                                |
VARIANT:   |                                                 |
KEY:       |a                                                |
METER:     |44                                               |
SH. NOTE:  |8                                                |
           +-------------------------------------------------+
```

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5) see also rules of documentation of the database ETNO, Essen
1984.

2.3.2 MIDI-Input, Editing, Storing

To play a melody: The panel folowing the mask specifies the metronome's beat. For example:

The metronome will count quarter notes

The bottom line contains the options CHANGE TEMPO, START, ABORT. If you choose the option T then the metronom startes playing one quarter = 64, one eight = 128. The high beep tones signify the first beat in the bar, the lower beeps the remaining beats. If you choose FREE meter (including songs with variable meters), then you only hear single pitch beeps.

You can now accelerate or slow down the metronome by hitting the plus- or minus- keys6). This is also the place to test the tempo or to practice the melody without storing it. The menue informes you that it is only a TEST. Use F9 to begin storing the melody. When you hear the metronome, you can start play. Any (computer-) key will then stop the MIDI-Input.

To edit: After any error-messages which draw your attention to the need for corrections, a special editor is called by hitting a key. It contains the complete melody in ESAC. At the same time the synthesizer plays the melody once more.

The following keys can be used for correcting and storing your data:

```
Arrow keys:      control cursor movements
Insert:          chooses insert-mode
Delete:          deletes the sign above the cursor
BACKSP <-:       deletes the sign left of the cursor
F8:              marks the phrase end before the cursor's position
                 and files the line. Use this key after correcting
                 the respective line.
F9:              ends editing and shows the whole document as a
                 result.
<ESC>            back to the previous level. The MIDI-input is
                 then deleted.
```

Any of the alpha-numeric keys can be used. The program does not respond to special keys.

The above quoted German (p. 7) example now looks like the following in the editor:

```
5   +1_5_5_+1   7b4_7b_.04   3b_1_2_-7b_   1_1_0_5_   4_4_
4_4_   5_11_.05   4_4_4_4_   55_.057b+1   +3b_+1_5_3b   43
b_5_.02   3b_1_2_-7b_   2_1_0_.  //
```

==
-> <- Ins Del End Home Accept Line: F8 Continue: F9 Abort: <ESC>
──────────────────────────
6) Care: do not hit too hastily! The computer needs some time to transmit your wishes to the MPU.

==

To save: The complete document will be printed when hitting the
F9-key. No further changes can then be made. One can choose now to
playe the song again or to saved it and proceed to another melody.

The complete example in AskSam format looks like this:

FRAUEN
CUT[Der Mann das ist ein Lustobjekt
     Mein Freund steht auf dem Fussballplatz
     und ich steh in der Kueche.]
REG[Bundesrepublik Deutschland]
TRD[Quelle: Frauenliederbuch, Dortmund 1986
     Musik: Angy Domdey]
KEY[F0001 08   A 4/4]
MEL[+1_5_5_+1_   7b4_7b_.0
       3b_1_2_-7b_   1_1_0_
     5_   4_4_4_4_   5_11_.0
     5   4_4_4_4_   55_.0
     57b+1   +3b_+1_5_3b_   43b_5_.0
     2   3b_1_2_-7b_   2_1_0_. //] >>
FCT[Frauen - Lied]
REM[gekuerzt]

_____

Melody ok? (Y/N)   (No = play again)

2.3.3 General rules for MIDI-Input

1) Try to play NON LEGATO!
2) Listen carefully to the METRONOME (and the first beat)!
3) Play DURATIONS and PAUSES accurately!
4) Do not press two keys at the same time!

If you do not follow these rules, the program may print error messages. When there are only a few mistakes, use the editor for corrections. If there are many, it is better to play the melody again.

In general it is helpful to use the PLAY-programs to listen for corrections after having stored a larger number of melodies. The software SIDEKICK could perhaps help to make corrections directly in the original file.

3. SYNtax - Analyze Mistakes

3.1 How to use the program

The Syntax program is one of the important supports in MAPPET for
analyzing mistakes. Not only the ESAC code will be analyzed but
also the explicit field signs like "[]" in AskSam. Any possible
syntactic mistake will be reported.

3.2 To Start the program

Write: SYN <filename.type>
or   SYN <filename>
or   SYN

The missing information will either be added or asked for. The
entire file will be searched for mistakes. This can, of course,
take some time depending on the file's size. You will hear an
acoustic signal when SYNtax has finished. Then a table is printed
on the screen containing the kind of mistakes, the running line
numbers of the file and some more specific remarks on the kind of
mistake. For example:

Error type	line number	comments
syntax	5	bar line in inadmissible form
Syntax	105	length symbol after a bar line

Syntax   355   final bar line missing

                              Press any key to continue...

Up to 20 error messages can appear on one screen which can be
printed up to a maximum of 140 lines by <screen prt>. One should
correct mistakes anyway before starting the next diagnosis run.

3.3 Error messages

3.3.1 Format, Meter, Key, Line-Length

These mistakes refer to the field KEY[in AskSam documents, which
contain formatted information on meter, key and time. The program
first searches for information after the signature (5 digits). If
there is information, this means that a melody should really
follow. If not it could be reported that the final symbol "//" is
missing because this has to end any melody. If the key line is not
completed but a melody exists then you read messages like the
following:

Format	4	incorrectly placed spaces
Key	4	incorrect or incorrectly placed
meter	4	missing

When the keyline is completed, then it will be tested if the BLANKS are in the correct places and if the key (A, B, C# etc.) is correct7). When one line is longer than 80 columns, this also results in an error message.

The next step is to control the species of time. Some mistakes can be caused by putting the time in the wrong column. Melodies in quintuple time or 7-beat measure etc. will also be controlled for additional information (3+2, 2+3 or 4+3 etc.) which has to appear because some analysis-programs must consider this mode. The following diagnoses are possible:

line length	2	contains more than 80 characters
meter	16	inadmissible: 2/3
meter	95	insufficiently defined
bar line	105	missing
meter	201	insufficient or format (%) incorrect

3.3.2 Indentations and Paragraphs

The database fields contain an identation of 4 spaces for every paragraph. They are divided by "[]". It there is no indentation or dividing mark, then the following messages appear:

Indentation	15	incorrect sign π
Paragraph	21	] missing

It was necessary to restrict the number of lines per document for some of the analysis programs. 17 lines are allowed before the KEY paragraph. The melodies themselves can contain up to 59 lines. Syntax reports if there are more:

line number	4	more than 17 lines before KEY
line number	435	more than 20 lines after MEL
line number	555	more than 59 Melody lines

3.3.3 Syntax errors

The largest number of possible mistakes refers to ESAC syntax, i.e. "spelling" of notes, bar lines, final symbols, triplets etc. The controlling strategies were developed by experience from typical encoding mistakes. Only the following mistakes are detected:

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7) cf. also Schaffrath/Jesser: Encoding Music with ESAC, Essen 1987

- The   characters used   in ESAC are: 0 1 2 3 4 5 6 7 ˜ x + - _ .
b
    #. Then there are special signs like ( ) / and the BLANK. Any
    other character would be marked as "unidentified".

        Syntax   15   incorrect character π

- Accidentals have to be placed after the pitch symbol. Otherwise
    this will cause an error message.

        Syntax   333   accidental incorrectly placed

- The bar in ESAC is signified by two BLANKS. Should there be only
    one or three and more, then an error message will appear.

- the symbol for the end of melodies is "//". If this missing or
    incomplete or follows after too many blanks, the program
    prints an error message.

        Syntax   ...   final bar line missing
        Syntax   ...   final bar lin incorrect

  - If the Underline is misplaced by BLANKS, then the following
    messages may appear:

        Syntax   ...   length symbol after a bar line

- Brackets signify triplets in ESAC. The program checks if the
    brackets within one melody line are correctly closed. It also
    checks for the correct symbols within the brackets:

Syntax   ...   triplets contain incorrect character

Syntax   ...   triplet parantheses not closed

- ESAC-pitches between --1 and ++7 are allowed for the analysis
    programs. Both lower and higher notes would cause error
    messages. Messages will also be printed when one uses
    legitimate signs in illegitimate combination like
    +-5__ , 7bb, -3b_.__ or 1_.. :

Syntax   ...   invalid pitch +-5

Syntax   ...   invalid duration _._

It is also possible for one mistake to cause two or three
different error messages.

In any case we highly recommend that the analysis programs are
only used after checking the melodies with SYNtax!

4. PLAY - the listening programs for corrections

4.1 Usage

The programs were developed to play melodies of the Essen
databases successively. The melodies have to follow the "Rules of
encoding", i.e. the must follow the formats and only contain
melodies in ESAC. The reserved file-type for AskSam datafiles are
.SM and .SAM. Other filetypes are possible, however.

4.2 Special features and restrictions

The basic abilities of the PLAY programs are:

- they read ESAC from --1 to ++7

- they read songs in order of succession, but jumping to higher
    song number is possible. Use the F10-key to call a counter
    showing the running number of the melody. With the arrow-key
    "->" you can spool the file. It is not possible to read
    backwards.

- Melodies can be repeated as often as one likes. During any
    repetition the tempo may be changed. Afterwards the "original"
    tempo is active again.

- You can at any time use <ESQ> to stop the actual part of the program. The same can be done to stop the whole process of playing.

- The programs are guided by a bottom line.

The programs transpose the melodies into the respective keys. Very short caesuras are inserted at the end of each line to make it possible to hear phrase-ends. The program has a default tempo which has been traced empirically using many German folksongs. But during the process of repeating one can choose "one's own" tempo within reasonable limits.

The "instrument" has to be 'marked' after calling the program. Any micro computer has its tone generator. If you want to use a synthesizer, you must have the respective interface.

The sythesizer version has two additional features for listening to large numbers of melodies for checking. The program accentuates the strong beats (only the first tone in the bar). This makes it easier to follow unknown melodies on the screen. One can also change the synthi sounds before one falls asleep during prolonged playback using.

Using the PC's generator, however, enables one to listen to five different temperaments in which the tone numbers 1 to 7 can be tuned. You have to mark first if only well tempered scales are

requested or others. One may then choose between the following
scales:

Major/Minor (equal temperament), Pelog, A Thai Scale, An African
Scale, Chinese "Pythagorean" temperament.

Accidentals are ignored (except in Major/Minor), i.e. only scales
using up to a maximum of 7 different tones are possible. In other
cases accidentials are simply ignored.

This mode of the program does not transpose the songs to the
original key but plays any melody in tonic 1=C. If you just want
to listen to a demonstration of the Scales, please call the
program "SCALES".

Restrictions: the upper limit for long melodies is 800 tones.

4.3 Runnning the programs

To begin the program you simply call PLAY or PLAY <song> or PLAY
<song.ft>. Missing information will be added or asked for.

Hardware necessary: the compiled PLAY- programs run on any IBM
XT/AT and compatible machines. If one uses the version for
synthesizer, one also needs a Roland MIDI-Interface with the MIDI
chip (MPU-IPC).

5 ANAlysis - the program to analyze Melodies

5.1 Description

ANAlysis analyzes ESAC melodies for 12 attributes which will be
stored together with the complete documents. The methods are
derived from occidential folk music and can be used for other
musics only under certain conditions8). The rules of encoding
contain the formats for the results of analysis. The program
considers automatically the file type .SM for input files and
outputs the same file including analytical results as .SAM.

Call ANALYSIS either by the word ANA or ANA <song> or ANA
<song.ft>. Again the missing information is either asked for or
added. The following parameters can be chosen for any run:

---

8) Parameters and strategies preceeding the algorythms are set out
   in B. Jesser: Interaktive Melodieanalyse, Essen 1989. This
   dissertation contains also a discussion of possibilities of
   usage. It exists only in German language.

[ANA]

Any of the parameters can be selected by <return>. The function-key F9 starts the program.

There are some special marks in AskSam files: >> will be found at several places to control the screen paging. The contour lines and the accented tones do not contain BLANKS as it seems but a hidden ASCII character (255) which allows special search strategies.

If the number of durations within one bar does not match the respective meter, error messages are created containing the line number of the bar. Sometimes one has to search for these mistakes as well in the preceeding as in the following line. It is of vital importance to correct these mistakes because quite a few of the sub-programs rely on the correctnes of this notation.

After every error the program stops to make sure that the user has read the message. The program can be continued by hitting any key. One should in any case correct the mistakes first and then repeat the analysis.

5.2 Restrictions

- the (unanalyzed) documents are restricted to a length of 95
    lines. The   paragraphs preceeding   the   melody (KEY)   are
    restricted to 17, the melody itself must not be larger than 59

lines. After the melody another 20 text lines may follow.

- the general length of 80 characters per line must not be exceeded.

- melody lines in ESAC must not contain more than 40 note symbols.

If any of these restrictions are exceeded, ANAlysis may truncate lines. Another good reason for using SYNtax before ANAlysis.

6. TRANS - the transformation program for databases

The program TRANS translates AskSam melodies into a kind of "neutral" (STAIRS) format. This has the advantage that one also can exchange any mnemonics used for AskSam files for other purposes or softwares. A STAIRS file contains line numbers instead of mnemonics. As the English mnemonics of MAPPET differ from the German ones, one can translate German source files into STAIRS and then retranslate them into the English version and vice verse. This, however, should only be done with the unanalyzed files. For the German version there exists also a program "STRIP", which reduces the analyzed files to the unanalyzed version.

TRANS operates the same way as the other programs. If you translate the file SONG.SM then the resulting file would be named SONG.IN and vice verse. The "direction of translation" can be detected by the program itself. It refuses to translate files that do not follow either STAIRS or AskSam formats.

7 Addenda

7.1 Literature

Information about ESAC Code and the STAIRS database formats is provided in a manual which exists in German and English. There is, however, no manual for documents in AskSam which differ only slightly from STAIRS formats. The most detailed description of

analysis parameters and rules are in Chapt. 6 of the dissertation "Interaktive   Melodieanalyse"   by   Barbara   Jesser.   This -

unfortunately - only in German.

Since many aspects of the project can be better appreciated by understanding the preceeding processes, the following list also contains articles on archiving:

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    stem   for the documentation of traditional music at Essen
    University, W.Germany. In: The World of Music, Nov.. 1985

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    tion in the Essen analysis project. In: Maschinenschriftliches
    Manuskript des Vortrags zum Meeting der ICTM Study Group on
    Computer Aided Research Edinburgh 28.9. - 1.10. 1988. 1988

Jesser, Barbara: Interaktive Melodieanalyse. Methodik und Anwen-
    dung computergest}tzter Analyseverfahren in Musikethnologie
    und Volksliedforschung: typologische Untersuchung   der
    Balladensammlung des DVA. Essen 1989

Schaffrath H.: Datenbank zur Erfassung von Musik auf Tontr{ger
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    kunftstechnologie Neue Medien. Schriften und Berichte Band
    9. 1986, S.59-65. 1986

Schaffrath, H.: Computer Cataloging. A Database System for Ethnic
    Music at Essen University, West Germany. In: IASA
    phonographic bulletin, No 39/July. 1984

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    Music at Essen University, West Germany. In: IASA phonographic
    bulletin, No 39/July, S.35-39. 1984

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    einer Datenbank ethnomusikologischer Schallplatten der
    Universit{t Essen. In: Musikp{dagogische Forschung, Band 6,
    Laaber, S.253-263. 1985

Schaffrath, H.: Die vollautomatische Weichware. In: Computernjus
    Nr. 26. Essen (Universit{t Essen) 1988

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    1984ff

Schaffrath, H.: How to retrieve one-part Melodies and their Vari-
    ants. Ideas and Strategies for Computer-Aided Analysis at Es-
    sen, FRG. In: Maschinenschriftliches Manuskript des Vortrags
    auf der Tagung "Computers in Music Research" Lancaster, April
    1988. (1990: Academic Press?)

Schaffrath, H. und Jesser, B.: Erfassungsregeln zur Melodiedaten-
    bank. In: Handbuch. Universit{t Essen 1987

7.2 Source code

One can ask for the source code under certain conditions (see
address on the licence aggreement).

1MAPPET Music Analysis Software Package   18

7.3 FIELD mnemonics of a complete file

The results of automatic analysis appear additively. The line-
numbers would be changed accordingly, should one use less ana-
lytical programs.

```
+----------------------------------------------------------+
|TITLE OF THE PIECE                         (Line no. 1)  |
|==========================================================|
|Field- |    Contents                                     |
|Names: |    (mostly percentages)                         |
|==========================================================|
|STN[]  | Soundtrack-No.                                  |
|ST[]   | Soundtrack    (tape, video, etc.)               |
|UN[]   | Unison (Primen)                    (Line no. 2) |
|2S[]   | Second minor ("small")        +---------+       |
|2M[]   | Second major                  |ASCENDING|       |
|3S[]   | Third minor                   +---------+       |
|3M[]   | Third major                                     |
|4P[]   | Fourth perfect                                  |
|4A[]   | Fourth augmented                                |
|5P[]   | Fifth perfect                                   |
|6S[]   | Sixth minor                                     |
|6M[]   | Sixth major                                     |

|.............................+---------+.................|
|7S[]   | Seventh minor       |ASCENDING|   (Line no. 3) |
|7M[]   | Seventh major       +---------+                 |
|8P[]   | Octave perfect                                  |
```

```
|8L[]    | larger than Octave                                    |
|SI[]    | Sum of Intervals ascending (%)                        |
|ABS[]   | Absolute No. of Intervals                             |
|SA[]    | Steps ascending   (%)                                 |
|LA[]    | Leaps ascending   (%)                                 |
|........................................................|
|        |                                                      |
|SB[]    | Sum of bars (absolute no)           (Line no. 4) |
|2s[]    | second minor               +----------+              |
|2m[]    |   "     major              |DESCENDING|              |
|3s[]    | third  minor               +----------+              |
|3m[]    |   "     major                                        |
|4p[]    | fourth perfect                                       |
|4a[]    |   "     augmented                                    |
|5p[]    | fivth  perfect                                       |
|6s[]    | sixth  minor                                         |
|6m[]    |   "     major                                        |
|........................................................|
|7s[]    | seventh minor                       (Line no. 5) |
|7m[]    |   "      major                                       |
|8p[]    | Octaves perfect                                      |
|8l[]    | larger than Octave                                   |
|si[]    | Sum of descendent Intervalle (%)                     |
|dt[]    | Descendence tendency (pos., neg., 0)                 |
|sd[]    | Steps descend.(%)                                    |
|ld[]    | leaps descend.(%)                                    |
+--------------------------------------------------------+
```

Field-Names:	Contents	
1D[]	Duration: smallest unit (Line no. 6)	
2D[]	Duration: double length	
3D[]	Duration: triple length	
4D[]	Duration: quadruple length	
LL[]	longer Durations (length)	
DD[]	double dotted	
TD[]	triple "	
QD[]	quadr. "	
TS[]	Triplets/Sextuplets	
SD[]	Sum of different durations (absolute)	
SL[]	Sum of all durations (incl. pauses; absolute)	
LD[]	Degree lower than -3b (Line no. 7)	
L3M[]	lower third degree (minor)	
L3[]	" " " major	
L4[]	" fourth "	
L4A[]	" " " augmented	
L5[]	" fifth "	
L6M[]	" sixth " minor	
L6[]	" " " major	
L7M[]	" seventh " minor	
L7[]	" " " major	
M1[]	middle first degree ("Tonic") (Line no. 8)	
M2M[]	" second " minor	
M2[]	" " " major	

```
|M3M[] |    "    third    "      minor                      |
|M3[]  |    "      "      "      major                      |
|M4[]  |    "    fourth   "                                 |
|M4A[] |    "      "      "      augmented                  |
|M5[]  |    "    fifth    "                                 |
|M6M[] |    "    sixth    "      minor                      |
|M6[]  |    "      "      "      major                      |
|.....................................................|
|M7M[] |    "    seventh  "      minor         (Line no. 9) |
|M7[]  |    "      "      "                                 |
|U1[]  | upper  first     "                                 |
|U2M[] |    "    second   "      minor                      |
|U2[]  |    "      "      "      major                      |
|U3M[] | upper  third     "      minor                      |
|U3[]  |    "      "      "      major                      |
|HD[]  | Higher degrees                                     |
|======|=============================================|
|PB[]  | Publisher       [next screen = (Line no 10f)]      |
|CUT[] | Title of Cut (Take)                                |
|CNR.  | Cut number of tape etc.                            |
|REG[] | Region                                             |
|ETH[] | Ethnic group (also language-family etc.)           |
|SRC[] | Source / way of tradition                          |
|RHY[] | Rhythm. Incipit                                    |
|KEY[] | Key - line                      NP[] No of Phrases  |
|MEL[  | Melody notation                                    |
+----------------------------------------------------+
```

```
|============================================================|
|Field- |      Contents                                      |
|Names: |                                                    |
|=======|============================================================|
|       |                                                    |
|MOD[]  | Scale/Mode    RANGE   [] ()<- low - high tone      |
|       |                                                    |
|CAD[]  | Cadential tones                                    |
|ACC[]  | accented  tones                                    |
|FOP[]  | FORM pitch                                         |
|FOR[]  |   "  rhythm                                        |
|FOC[]  | FORM contour                                       |
|PHRAS[]| up/down-beat of phrases                            |
|FCT[]  | Function                                           |
|CMT[]  | Comment                                            |
+------------------------------------------------------------+
```

7.4 Material in databases:

+------+
¦ETHNO ¦   contains ethnomusicological sound material. As some
+------+   different material has the same format, it is also
            stated here. The following databases exist in AskSam or
            in ASCII-Format: (STATUS: 12/89)

            NAME   BYTEs (in AskSam)   no. of pieces

            AFRIKA   878627   831
            ASIEN1   266032   251
            ASIEN2   304241   325
            ASIEN3   649711   555
            EUROPA1   167494   146
            EUROPA2   362264   323
            EUROPA3   322326   346
            FOLKL1   1232093   845
            FOLKL2   57387   45
            PAZIFIK   90205   52
            ROCK   114382   86
            S

MAPPET is public domain but we want you to sign the licence agreement.
To start: write MAPPET.
To start any program within MAPPET: use F9.
To end: use ESC or <ctlr.+break>.
Follow the prompts (which are still in German only).
Use F1 key to read short explanations on the resp. program.

To start the SINGLE programs use their names:
    PLAY   (fn.ft) (plays the melody for "proofreading")
    SYNTAX (fn.ft) (controls for allowed codes, lengths etc.)
    MIDIin (fn.ft) (translates the played-in melody into ESAC) *)
    ANAlys (fn.ft) (has 12 additive options to analyse the melody)
TRANSL translates German AskSam-files into STAIR-format (*.IN) and
    vice verse.
TRANSE translates English files ... (see above)
SCALES demonstrates different scales (temperaments).
NOTE translates input files into Personal Composer Record files for
    staff notation (works best with version 1.35, but also later versions).
PATTERN transposes any ESTAFF pattern on different steps of Scales.
With the program goes a MAPPET user's guide.

---

*) You must have a MIDI-interface and a Synthesizer to start this!

ADDITIONS (Jan. 1991)

ANA had to be re-constructed and improved. Copy ANAE.TXT as ANA.TXT
to have the English edition and ANAD.TXT for the German.
PATTERN has be renamed into PATTERN1. There is an English text-file
(PATTE.TXT) but still use the German answers for <D>ur and <M>oll.
We are still working on it.
There will be new editions with international textfiles soon. Also
a new concept concerning the input of (some?) lyrics. Then ANA will
be re-written.

```
ëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëë£
                                                                          ¤
         A N A L Y S I S    P A R A M E T E R S                           ¤
                                                                          ¤
                                                                          ¤
              (1)   Inventory of intervals                                ¤
              (2)   Inventory of durations                                ¤
              (3)   Inventory of pitches                                   ¤
              (4)   Rhythmic incipit                                       ¤
              (5)   Scale and mode                                         ¤
              (6)   Range                                                  ¤
              (7)   Stressed tones                                         ¤
              (8)   Cadential tones                                        ¤
          *   (9)   Form (pitch)                                           ¤
          *  (10)   Form (rhythm)                                          ¤
             (11)   Contour (of phrases)                                   ¤
             (12)   Up/Downbeat of phrases                                 ¤
                                                                          ¤
ëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëëë¥
```

Cursor: Cursor: select/deselect: <RETURN>   Sart: F9   End: <ESC>

ZUCCAL
CUT["Mailied"
    DER MAI TRITT EIN MIT FREUDEN]
REG[Europa, Mitteleuropa, Deutschland, Niederrhein]
KEY[Z1262 08 Bb 3/4] ZZ[8]
MEL[-5_ 1_.231 -5_.-3
    -4-5 -6_.-71-6 -5_-4_
    -3_ -4_-6_-5-4 -3_-5_
    1_ 321_-7_ 1__
    12 3_1_5_ 2_1_
    -7_ 1_-6_2_ -7_-5_
    -5_ -6_.-71-6 -5_1_
    3_ 321_-7_ 1__ //] > >
FOP['a__b__c__d__bs'cs'bw_dw_]
FCT[Natur und Welt]

ZUCCAL
CUT["Mailied"
    DER MAI TRITT EIN MIT FREUDEN]
REG[Europa, Mitteleuropa, Deutschland, Niederrhein]
KEY[Z1262 08 Bb 3/4] ZZ[8]
MEL[-5_ 1_.231 -5_.-3
    -4-5 -6_.-71-6 -5_-4_
    -3_ -4_-6_-5-4 -3_-5_
    1_ 321_-7_ 1__
    12 3_1_5_ 2_1_
    -7_ 1_-6_2_ -7_-5_
    -5_ -6_.-71-6 -5_1_
    3_ 321_-7_ 1__ //] > >
MOD[HEPTATONIC IONIAN]
ACC[1-5_-6-5_-4-3_31_32_1-7_-6-5_31_]
FOR['a__b__c__d__e__ev_bv_d__]
FOC['^d_^__~a_^__^__^d_~a___]
FCT[Natur und Welt]

ZUCCAL

UN[6] 2S[13] 2M[17] 3S[2] 3M[6] 4P[8] 4A[0] 5P[2] 6S[0] 6M[0]
7S[0] 7M[0] 8P[0] 8L[0] SI[47] ABS[53] SA[30] LA[17]
SB[16] 2s[9] 2m[19] 3s[9] 3m[6] 4p[4] 4a[0] 5p[0] 6s[0] 6m[0]
7s[0] 7m[0] 8p[0] 8l[0] si[47] dt[0] sd[28] ld[19]
1D[37] 2D[52] 3D[4] 4D[0] LL[0] DD[7] TD[0] QD[0] TS[0] SD[4] SL[54]
LD[0] L3M[0] L3[6] L4[7] L4A[0] L5[17] L6M[0] L6[11] L7M[0] L7[11]
M1[26] M2M[0] M2[11] M3M[0] M3[9] M4[0] M4A[0] M5[2] M6M[0] M6[0]
M7M[0] M7[0] U1[0] U2M[0] U2[0] U3M[0] U3[0] HD[0] > >
CUT["Mailied"
    DER MAI TRITT EIN MIT FREUDEN]
REG[Europa, Mitteleuropa, Deutschland, Niederrhein]
KEY[Z1262 08 Bb 3/4] ZZ[8]
MEL[-5_ 1_.231 -5_.-3
    -4-5 -6_.-71-6 -5_-4_
    -3_ -4_-6_-5-4 -3_-5_
    1_ 321_-7_ 1__
    12 3_1_5_ 2_1_
    -7_ 1_-6_2_ -7_-5_
    -5_ -6_.-71-6 -5_1_
    3_ 321_-7_ 1__ //] > >
FCT[Natur und Welt]

ZUCCAL
CUT["Nachtgruss"
    GUTEN ABEND GUTE NACHT]
REG[Europa, Mitteleuropa, Deutschland, Nord - Deutschland]
KEY[Z1363 16 Eb 3/4] ZZ[8]
MEL[1_.1 5__.4_3__ 3___
    1__ 2__2__2_4_ 4__
    3__ 5__3__4__ 5__.6_5__
    5__3__4__ 3__0__
    2__4_3_4_2_ 3_.45__0__
    2__4_3_4_2_ 3_.45__0__
    5__5__3_3_ 5__+1_3_
    6_5_ 5__4_3_4_2_ 1___ //] > >
FOP['a__b__c__d__cs'cs'e__ds']
FCT[Kinder - Lied]

ZUCCAL
CUT["Nachtgruss"
    GUTEN ABEND GUTE NACHT]
REG[Europa, Mitteleuropa, Deutschland, Nord - Deutschland]
KEY[Z1363 16 Eb 3/4] ZZ[8]
MEL[1_.1 5__.4_3__ 3___
    1__ 2__2__2_4_ 4___
    3__ 5__3__4__ 5__.6_5__
    5__3__4__ 3__0__
    2__4_3_4_2_ 3_.45__0__
    2__4_3_4_2_ 3_.45__0__
    5__5__3_3_ 5__+1_3_
    6_5_ 5__4_3_4_2_ 1___ //] > >
MOD[SIX-TONE-SKALE MAJOR ?]
ACC[53_24_55_53_23_23_55_51_]
FOR['a__b__c__cw_d__d__bw_dw_]
FOC['^a_/__/____~a_~a_Sd___]
FCT[Kinder - Lied]

ZUCCAL
UN[19] 2S[13] 2M[13] 3S[9] 3M[0] 4P[4] 4A[0] 5P[2] 6S[0] 6M[0]
7S[0] 7M[0] 8P[0] 8L[0] SI[42] ABS[53] SA[26] LA[15]
SB[16] 2s[11] 2m[11] 3s[11] 3m[2] 4p[2] 4a[0] 5p[0] 6s[2] 6m[0]
7s[0] 7m[0] 8p[0] 8l[0] si[40] dt[+2] sd[23] ld[17]
1D[5] 2D[39] 3D[40] 4D[7] LL[0] DD[5] TD[4] QD[0] TS[0] SD[6] SL[57]
LD[0] L3M[0] L3[0] L4[0] L4A[0] L5[0] L6M[0] L6[0] L7M[0] L7[0]
M1[7] M2M[0] M2[15] M3M[0] M3[26] M4[24] M4A[0] M5[22] M6M[0] M6[4]
M7M[0] M7[0] U1[2] U2M[0] U2[0] U3M[0] U3[0] HD[0] > >
CUT["Nachtgruss"
        GUTEN ABEND GUTE NACHT]
REG[Europa, Mitteleuropa, Deutschland, Nord - Deutschland]
KEY[Z1363 16 Eb 3/4] ZZ[8]
MEL[1_.1 5__.4_3__ 3___
     1__ 2__2__2_4_ 4__
     3__ 5__3__4__ 5__.6_5__
     5__3__4__ 3__0__
     2__4_3_4_2_ 3_.45__0__
     2__4_3_4_2_ 3_.45__0__
     5__5__3_3_ 5__+1_3_
     6_5_ 5__4_3_4_2_ 1___ //] > >
FCT[Kinder - Lied]

ZUCCAL
CUT[ICH HAB' DIE NACHT GETRAEUMET]
REG[Europa, Mitteleuropa, Deutschland]
KEY[Z0052 16 G 6/8] ZZ[4]
MEL[-5_   1__2_3b_2_1_   5__.5__
    4_   3b_.21_-7__1_   2__0__.
    1_   5__5_3b__1_   +1__.6b__
    4_   3b_.21_2_.1-7_   1__0__. //] > >
FOP['a__b__c__d__]
FCT[Sagen - Lied, Romanze, Tod]

ZUCCAL
CUT[ICH HAB' DIE NACHT GETRAEUMET]
REG[Europa, Mitteleuropa, Deutschland]
KEY[Z0052 16 G 6/8] ZZ[4]
MEL[-5_ 1__2_3b_2_1_ 5__.5__
    4_ 3b_.21_-7__1_ 2__0__.
    1_ 5__5_3b__1_ +1__.6b__
    4_ 3b_.21_2_.1-7_ 1__0__. //] > >
MOD[HEPTATONIC HARMONIC MINOR]
ACC[13b55_3b-72_53b+16b_3b21_]
FOR['a__b__c__d__]
FOC[' ~ a_Vd_^a___]
FCT[Sagen - Lied, Romanze, Tod]

ZUCCAL
UN[7] 2S[10] 2M[10] 3S[0] 3M[0] 4P[3] 4A[0] 5P[7] 6S[0] 6M[0]
7S[0] 7M[0] 8P[3] 8L[0] SI[34] ABS[29] SA[21] LA[14]
SB[8] 2s[17] 2m[28] 3s[7] 3m[7] 4p[0] 4a[0] 5p[0] 6s[0] 6m[0]
7s[0] 7m[0] 8p[0] 8l[0] si[59] dt[-25] sd[45] ld[14]
1D[9] 2D[44] 3D[25] 4D[0] LL[0] DD[9] TD[13] QD[0] TS[0] SD[5] SL[32]
LD[0] L3M[0] L3[0] L4[0] L4A[0] L5[3] L6M[0] L6[0] L7M[0] L7[7]
M1[30] M2M[0] M2[20] M3M[13] M3[0] M4[7] M4A[0] M5[13] M6M[3] M6[0]
M7M[0] M7[0] U1[3] U2M[0] U2[0] U3M[0] U3[0] HD[0] > >
CUT[ICH HAB' DIE NACHT GETRAEUMET]
REG[Europa, Mitteleuropa, Deutschland]
KEY[Z0052 16 G 6/8] ZZ[4]
MEL[-5_ 1__2_3b_2_1_ 5__.5__
    4_ 3b_.21_-7__1_ 2__0__.
    1_ 5__5_3b__1_ +1__.6b__
    4_ 3b_.21_2_.1-7_ 1__0__. //] > >
FCT[Sagen - Lied, Romanze, Tod]

ZUCCAL
CUT[IM WALD UND AUF DER HAIDE]
REG[Europa, Mitteleuropa, Deutschland, Anclam]
KEY[Z0204 16 C 6/8] ZZ[8]
MEL[-5_ -5__-5_-5__-5_ -5__3_1_-7_
    1_ -6__-6_-6__-6_ -6__4_2_1_
    2_ -7__-7_-7_1_2_ 3__.
    4_3_2_ 1__1_-7_-6_-7_ 1___
    1_2_ 3__333__33_5__.
    5_4_3_ 2__2_2_1_2_ 3__.
    4_3_2_ 1__1_-7_-6_-7_ 1__.
    5_4_2_ 2__2_2_1_2_ 1__0_ //] > >
FOP['a__as'b__c__d__e__c__ew_]
FCT[Jaeger - Lied]

ZUCCAL
CUT[IM WALD UND AUF DER HAIDE]
REG[Europa, Mitteleuropa, Deutschland, Anclam]
KEY[Z0204 16 C 6/8] ZZ[8]
MEL[-5_ -5__-5_-5__-5_ -5__3_1_-7_
    1_ -6__-6_-6__-6_ -6__4_2_1_
    2_ -7__-7_-7_1_2_ 3__.
    4_3_2_ 1__1_-7_-6_-7_ 1__
    1_2_ 3__333__33 5__.
    5_4_3_ 2__2_2_1_2_ 3__.
    4_3_2_ 1__1_-7_-6_-7_ 1__.
    5_4_2_ 2__2_2_1_2_ 1__0_ //] > >
MOD[HEPTATONIC IONIAN]
ACC[-5-5-51_-6-6-62_-7-73_41-711_335_5223_41-71_52211_]
FOR['a__a__b__bv_c__bv_bv_bv_]
FOC['/__S__Va_Vd_/__Vd_Vd___]
FCT[Jaeger - Lied]

UCCAL
UN[36] 2S[9] 2M[14] 3S[1] 3M[0] 4P[0] 4A[0] 5P[1] 6S[1] 6M[1]
7S[0] 7M[0] 8P[0] 8L[0] SI[29] ABS[69] SA[23] LA[6]
SB[16] 2s[9] 2m[19] 3s[6] 3m[1] 4p[0] 4a[0] 5p[0] 6s[0] 6m[0]
7s[0] 7m[0] 8p[0] 8l[0] si[35] dt[-6] sd[28] ld[7]
1D[6] 2D[68] 3D[18] 4D[3] LL[0] DD[0] TD[6] QD[0] TS[0] SD[5] SL[71]
LD[0] L3M[0] L3[0] L4[0] L4A[0] L5[9] L6M[0] L6[10] L7M[0] L7[11]
M1[20] M2M[0] M2[21] M3M[0] M3[17] M4[7] M4A[0] M5[4] M6M[0] M6[0]
M7M[0] M7[0] U1[0] U2M[0] U2[0] U3M[0] U3[0] HD[0] > >
CUT[IM WALD UND AUF DER HAIDE]
REG[Europa, Mitteleuropa, Deutschland, Anclam]
KEY[Z0204 16 C 6/8] ZZ[8]
MEL[-5_   -5__-5_-5__-5_ -5__3_1_-7_
    1_   -6__-6_-6__-6_ -6__4_2_1_
    2_   -7__-7_-7_1_2_   3__.
    4_3_2_ 1__1_-7_-6_-7_ 1___
    1_2_ 3__333__33_ 5__.
    5_4_3_ 2__2_2_1_2_ 3__.
    4_3_2_ 1__1_-7_-6_-7_ 1__.
    5_4_2_ 2__2_2_1_2_ 1___0_ //] > >
FCT[Jaeger - Lied]

ZUCCAL
CUT[MORGEN MUSS ICH WEG VON HIER]
REG[Europa, Mitteleuropa, Deutschland]
KEY[Z0287 16 G 3/4] ZZ[8]
MEL[5__.3_6_5_ 5_.43__0__
    2_3_4_6_5_4_ 4__3__0__
    5__.3_6_5_ 5_.43__0__
    2_5_7_.65_4#_ 6__5__0__
    4__.3_2_1_ -7_.12__0__
    6__.5_4_3_ 2_.32__0__
    5__.3_4_5_ 6_7_+2_+1_7_6_
    5__.434_2_ 2__3__0__ //] > >
FOP['a__b__a__bw_c__cs'd__dw_]
FCT[Lyrisches Lied, Romanze, Abschieds - Lied]

ZUCCAL
CUT[MORGEN MUSS ICH WEG VON HIER]
REG[Europa, Mitteleuropa, Deutschland]
KEY[Z0287 16 G 3/4] ZZ[8]
MEL[5__.3_6_5_ 5_.43__0__
    2_3_4_6_5_4_ 4__3__0__
    5__.3_6_5_ 5_.43__0__
    2_5_7_.65_4#_ 6__5__0__
    4__.3_2_1_ -7_.12__0__
    6__.5_4_3_ 2_.32__0__
    5__.3_4_5_ 6_7_+2_+1_7_6_
    5__.434_2_ 2__3__0__ //] > >
MOD[EIGHT-TONE-SKALMAJOR ?]
ACC[55_24_55_26_4-7_62_56_52_]
FOR['a__b__a__c__a__a__d__e__]
FOC['Sd_^a_Sd_^a_Vd___Sa___]
FCT[Lyrisches Lied, Romanze, Abschieds - Lied]

ZUCCAL

UN[7] 2S[7] 2M[12] 3S[5] 3M[3] 4P[7] 4A[0] 5P[2] 6S[0] 6M[0]
7S[0] 7M[0] 8P[0] 8L[0] SI[35] ABS[60] SA[18] LA[17]
SB[16] 2s[15] 2m[37] 3s[7] 3m[0] 4p[0] 4a[0] 5p[0] 6s[0] 6m[0]
7s[0] 7m[0] 8p[0] 8l[0] si[58] dt[-23] sd[52] ld[7]
1D[10] 2D[49] 3D[25] 4D[0] LL[0] DD[7] TD[9] QD[0] TS[0] SD[5] SL[68]
LD[0] L3M[0] L3[0] L4[0] L4A[0] L5[0] L6M[0] L6[0] L7M[0] L7[2]
M1[3] M2M[0] M2[13] M3M[0] M3[20] M4[16] M4A[2] M5[23] M6M[0] M6[13]
M7M[0] M7[5] U1[2] U2M[0] U2[2] U3M[0] U3[0] HD[0] > >
CUT[MORGEN MUSS ICH WEG VON HIER]
REG[Europa, Mitteleuropa, Deutschland]
KEY[Z0287 16 G 3/4] ZZ[8]
MEL[5__.3_6_5_ 5_.43__0__
    2_3_4_6_5_4_ 4__3__0__
    5__.3_6_5_ 5_.43__0__
    2_5_7_.65_4#_ 6__5__0__
    4__.3_2_1_ -7_.12__0__
    6__.5_4_3_ 2_.32__0__
    5__.3_4_5_ 6_7_+2_+1_7_6_
    5__.434_2_ 2__3__0__ //] > >
FCT[Lyrisches Lied, Romanze, Abschieds - Lied]

ZUCCAL
UN[14] 2S[14] 2M[19] 3S[3] 3M[0] 4P[3] 4A[0] 5P[6] 6S[0] 6M[0]
7S[0] 7M[0] 8P[0] 8L[0] SI[44] ABS[36] SA[33] LA[11]
SB[10] 2s[14] 2m[14] 3s[6] 3m[6] 4p[0] 4a[0] 5p[3] 6s[0] 6m[0]
7s[0] 7m[0] 8p[0] 8l[0] si[42] dt[+2] sd[28] ld[14]
1D[20] 2D[73] 3D[7] 4D[0] LL[0] DD[0] TD[0] QD[0] TS[0] SD[3] SL[41]
LD[0] L3M[0] L3[0] L4[0] L4A[0] L5[3] L6M[0] L6[0] L7M[0] L7[8]
M1[32] M2M[0] M2[22] M3M[11] M3[0] M4[11] M4A[0] M5[14] M6M[0] M6[0]
M7M[0] M7[0] U1[0] U2M[0] U2[0] U3M[0] U3[0] HD[0] > >
CUT[VERSTOHLEN GEHT DER MOND AUF]
REG[Europa, Mitteleuropa, Deutschland, Niederrhein]
KEY[Z0036 16 C 2/4] ZZ[5]
MEL[-5_ 1_2_3b_1_ -7_1_2_0_
    1__5__ 4_5_1_
    1_ 2_2_4_4_ 4_53b2_0_
    1_-712_0_ 1_-712_0_
    1__5_5_ 3b_23b1_ //] > >
FCT[Sagen - Lied, Romanze; + + + 265 nach Gehör geändert. + + +]

ZUCCAL
CUT[VERSTOHLEN GEHT DER MOND AUF]
REG[Europa, Mitteleuropa, Deutschland, Niederrhein]
KEY[Z0036 16 C 2/4] ZZ[5]
MEL[-5_ 1_2_3b_1_ -7_1_2_0_
     1__5__ 4_5_1_
     1_ 2_2_4_4_ 4_53b2_0_
     1_-712_0_ 1_-712_0_
     1__5_5_ 3b_23b1_ //] > >
MOD[SIX-TONE-SKALE MINOR ?]
ACC[1-7_14_24_11_13b_]
FOR['a__b__c__d__e__]
FOC['~a_^__^a_/__^__]
FCT[Sagen - Lied, Romanze; + + + 265 nach Gehör geändert. + + +]

ZUCCAL
CUT[VERSTOHLEN GEHT DER MOND AUF]
REG[Europa, Mitteleuropa, Deutschland, Niederrhein]
KEY[Z0036 16 C 2/4] ZZ[5]
MEL[-5_ 1_2_3b_1_ -7_1_2_0_
    1__5__ 4_5_1_
    1_ 2_2_4_4_ 4_53b2_0_
    1_-712_0_ 1_-712_0_
    1__5_5_ 3b_23b1_ //] > >
FOP['a__b__c__d__bw_]
FCT[Sagen - Lied, Romanze; +++ 265 nach Gehör geändert. +++]

```
ANA: Analysis program for ESAC-encoded melodies (ASKSAM-Format)

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 Volume in drive G is DISK2_VOL2
 Directory of  G:\MUSTUF

.               ..            INFO31   DOC   1-91     LET   MAPPET   DOC
ATT      BGI   CGA      BGI   EGAVGA   BGI   HERC     BGI   IBM8514  BGI
PC3270   BGI   GOTH     CHR   LITT     CHR   SANS     CHR   TRIP     CHR
LIZENZ   DOC   ESTAFF2  EXE   ESACV11  HLP   MAMNOT   HLP   HERZPF   MDG
KREUZ    MDG   MEIYOU   MDG   V16      MDG   V8       MDG   EPSONLQ  PRT
NECP6    PRT   STANDARD PRT   STARNL10 PRT   TEST1    SM    ESTAFF2  TXT
ESTAFFD2 TXT   ESTAFFE2 TXT   NEUDAT   TMP   CODE     TMP   README   DT
README   ENG   ANA      EXE   PATTERN1 EXE   TRANSE   EXE   TEST     IN
README   MAP   TESTD    SM    TESTE    SM    ANA      TXT   ANAD     TXT
ANAE     TXT   PATTD1   TXT   PATTE1   TXT   PATTERN1 TXT   TEST     SAM
NEWMAP   DOC   TESTD    SAM   TESTINT  ESF   TESTCON  ESF   TESTCON2 ESF
TESTPIT  ESF   TESTSTR  ESF   ANABALL  DOC   BALLADS  SAM   SAMPLE   DOC
BALLADS  DOC   BALL1    DOC   BALL2    DOC   BALL3    DOC   BALL1    SAM
BALL2    SAM   BALL3    SAM   MUSTER   PRG   BALLAD10 SM    BALLAD20 SM
BALLAD30 SM    BALLAD40 SM    BALLAD50 SM    BALLAD60 SM    BALLAD70 SM
BALLAD80 SM    ALTDEU1  SM    ALTDEU2  SM    ZUCCAL0  SM    KINDER0  SM
DVA0     SM    FINK0    SM    VARIANT0 SM    BOEHME10 SM    BOEHME20 SM
ERK10    SM    ERK20    SM    ERK30    SM    ERK5     SM    TEST0    SM
README   DAT   TESTS
        92 File(s)   4087808 bytes free

G:\MUSTUF
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ZUCCAL
CUT["Nachtgruss"
     GUTEN ABEND GUTE NACHT]
(;[Europa, Mitteleuropa, Deutschland, Nord - Deutschland]
KEY[Z1363 16 Eb 3/4] ZZ[8]
MEL[1_.1   5__.4_3__   3___
    1__   2__2__2_4_   4__
    3__   5__3__4__   5__.6_5__
    5__3__4__   3__0__
    2__4_3_4_2_ 3_.45__0__
    2__4_3_4_2_ 3_.45__0__
    5__5__3_3_ 5__+1_3_
    6_5__   5__4_3_4_2__ 1___   //] >>
FOP['a__b__c__d__cs'cs'e__ds']
FCT[Kinder - Lied]

Doc 2 Pg 1 Ln 1" Pos 1"

(

(

ZUCCAL

CUT[SAH EIN KNAB EIN ROESLEIN STEHN]

REG[Europa, Mitteleuropa, Deutschland]

KEY[Z0113 08 F 2/4] ZZ[4]

MEL[1111 211_ 5531 4_4_
    1111 211_ 5531 444_
    3243 3_2_
    5353 +165_ 6+176 +2_+1_ //] > >

MOD[HEPTATONIC IONIAN]

ACC[1254_1254_33_5+16+2_]

FOR['a__b__c__a__]

FOC['~a_~a___Wa_]

FCT[Sagen - Lied, Romanze]