REPRESENTATION

****Tonh** — German Tonhöhe (pitch) notation

DESCRIPTION

The ****Tonh** representation permits the encoding of Western musical pitches using the common German system for pitch naming. This system is similar to the English system of pitch designations with the exceptions noted below.

The ****Tonh** representation distinguishes three types of data tokens: pitches, rests, and barlines. Pitches are encoded using pitch letter-name, accidental, and octave designation. In addition, ****Tonh** provides limited capabilities for representing phrasing and slurs.

Pitch tokens consist of three logical parts — without any intervening spaces. The first part is the pitch letter-name; only the upper-case letters A, B, C, D, E, F, G, H, and S are permitted. The second part is an optional accidental: the suffix 'is' designates a sharp, while the suffix 'es' designates a flat — hence 'Cis' for C-sharp and 'Ges' for G-flat. Suffixes may be repeated for double and triple sharps and flats. Special exceptions include the following: 'B' for B-flat, 'H' for B-natural, 'Heses' for B double-flat (rather than 'Bes'), and 'As' and 'Es' rather than 'Aes' or 'Ees'. In addition, 'S' may be used as an alias for 'Es' (E-flat).

The third part of a pitch token is the octave designation. The number 4 is used to designate all pitches between middle C and the H a major seventh above, inclusive. Octave numbers are incremented by one for each successively higher octave, and are decremented by one for each successively lower octave. Negative octave numbers are not permitted, so the lowest pitch in the ****Tonh** representation is C0 (16.35 Hz). Only a single octave digit is permitted, so the highest ****Tonh** pitch is H9 (15,804 Hz).

Once again, no intervening spaces are permitted within a single note. Notice that the order of signifiers is important for pitch encodings. Pitch letter-name is followed by one or more accidentals (if appropriate), followed by an octave designation.

Several notes may be encoded concurrently in a single spine by using the Humdrum multiple-stop convention: notes within multiple-stops are separated by single spaces. The following example encodes a C-minor chord as four pitches in two ****Tonh** spines — each spine containing a double-stop.

```
**Tonh    **Tonh
C4 Es4    G4 C5
*-        *-
```

Pitch tokens may be modified by the presence of additional signifiers. The open brace '{' denotes the beginning of a phrase. The closed brace '}' denotes the end of a phrase. The open parenthesis '(' denotes the beginning of a slur. The closed parenthesis ')' denotes the end of a slur. The semicolon ';' denotes a pause.

Rests tokens are denoted by the lower-case letter 'r'.

Barlines are represented using the "common system" for barlines — see **barlines (2).**

FILE TYPE

It is recommended that files containing predominantly `**Tonh` data should be given names with the distinguishing '.tnh' extension.

SIGNIFIERS

The following table summarizes the ****Tonh** mappings of signifiers and signifieds.

0-9	octave designation, where C4 equals middle C;
A-H	absolute pitches letter name
es	flat
eses	double flat ('eseses' for triple flat)
is	sharp
isis	double sharp
Heses	B double-flat (rather than 'Bes')
As	A-flat (rather than 'Aes')
Es	E-flat (rather than 'Ees')
S	alias for 'Es'
n	natural
r	rest
=	barline; == double barline
(	slur start
)	slur end
{	phrase mark (start)
}	phrase mark (end)
;	pause sign

Summary of ****Tonh** *Signifiers*

EXAMPLES

A sample document is given below:

```
!! Anton Webern
!! Klavierstück, opus posthumous
!! Im Tempo eines Menuetts
**Tonh
=2
(Cis4
Dn5)
Es3
r
Fis3
F4
E2
=3
Cn6
B2 A3
H4
Gis2 G3
Cis4
D2 S3
=4
*-
```

PERTINENT COMMANDS

The following Humdrum commands accept ****Tonh** encoded data as inputs:

cents	translate ****Tonh** to ****cents**
deg	translate ****Tonh** to ****deg**
degree	translate ****Tonh** to ****degree**
freq	translate ****Tonh** to ****freq**
hint	calculate harmonic intervals from ****Tonh** input
kern	translate ****Tonh** to ****kern**
mint	calculate melodic intervals from ****Tonh** input
pc	translate ****Tonh** pitch to ****pc**
pitch	translate ****Tonh** pitch to ****pitch**
semits	translate ****Tonh** pitch to numerical ****semits**
solfa	translate ****Tonh** pitch to ****solfa**
solfg	translate ****Tonh** pitch to ****solfg**
trans	transpose ****Tonh** score
vox	determine active and inactive voices in a Humdrum file

The following Humdrum command produces ****Tonh** data as output:

tonh	translates ****cents**, ****degree**, ****fret**, ****freq**, ****kern**,

**MIDI, **pitch, **semits, **solfg, and **specC to **Tonh

TANDEM INTERPRETATIONS

The following tandem interpretations can be used in conjunction with **Tonh:

meter signatures	*M6/8
key signatures	*k[f#c#]
key	*c#:
tempo	*MM96.3

Tandem interpretations for **Tonh

SEE ALSO

barlines (2), **cents (2), **deg (2), **degree (2), **freq (2), **hint (2), **hint** (4), **kern (2), **mint (2), **mint** (4), **pc (2), **pc** (4), **pitch (2), **pitch** (4), **semits (2), **solfa (2), **solfg (2), **solfg** (4), **specC (2), **tonh** (4)