REPRESENTATION

****specC** — spectral centroid representation

DESCRIPTION

The ****specC** representation can be used to represent the frequency of the spectral centroid for pure or complex tones. Spectral centroid is the amplitude-weighted mean of several frequency components. For example, given three frequencies (200, 400, 900 Hz) of equal amplitude, the corresponding spectral centroid would be the arithmetic mean of the three frequencies (i.e. 750 Hz). For pure tones, the spectral centroid is equivalent to the frequency of the pure tone. For complex tones, the spectral centroid is higher when tones have greater energy (amplitudes) in the upper partials. Hence, spectral centroid provides a simple index for the *richness* or *brightness* of a tone or sonority.

Spectral centroid tokens are numerical values in units of hertz. Frequencies may be specified as integer or real values (using a decimal).

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

FILE TYPE

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

SIGNIFIERS

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

0-9	frequency (in hertz) specified as an integer or real value
r	rest
=	barline; == double barline

Summary of ****specC** *Signifiers*

EXAMPLES

A sample document is given below:

```
**specC   **specC
*pure     *complex
=1        =1
1900      2730
868.9     .
1362      4402
2263.     .
.         3742
=2        =2
r         r
==        ==
*-        *-
```

Notice that frequencies can be either real or integer values. Rests are represented by the single letter 'r'.

PERTINENT COMMANDS

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

cents	translates **specC to **cents
deg	translate **specC to **deg
degree	translate **specC to **degree
freq	translate **specC to **freq
kern	translates **specC to **kern
pc	translate **specC pitch to **pc
pitch	translates **specC to **pitch
semits	translate **specC to numerical **semits
solfg	translate **specC pitch to **solfg
specc	change numerical precision of **specC values
tonh	translate **solfg pitch to **Tonh

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

specc	translates **freq, and **specC to **specC

TANDEM INTERPRETATIONS

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

pure tones	*pure
complex tones	*complex
meter signatures	*M6/8
key signatures	*k[f#c#]
key	*c#:

Tandem interpretations for **specC

SEE ALSO

barlines (2), ****cents** (2), ****deg** (2), ****degree** (2), ****freq** (2), ****kern** (2), ****pc** (2), ****pitch** (2), ****semits** (2), ****solfg** (2), ****Tonh** (2)