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| Title |  | Dateiname |
| Descartes: diatonic scale 1 | René Descartes' "Compendium musicae" contains a circular pitch diagram of the syntonic diatonic scale with an ambiguous second degree [10014]. The different versions of the diagram from the manuscript copies and early prints can be explored with this interactive application.  The user can place a transparent reference diagram on the diagram under consideration. The reference diagram can be shifted, rotated and adjusted in size. The angles in the reference diagram correspond to the logarithms of the ratios of string lengths indicated in Descartes' diagram.  By moving the mouse, the differences between the two diagrams are made audible with a sweeping sound. The diagrams are changed by pressing the keys 1 (forwards) or 2 (backwards). | descartes\_diatonic\_scale1 |
| Descartes: diatonic scale 2 | René Descartes' "Compendium musicae" contains a circular pitch diagram of a syntonic diatonic scale of eight notes with B and Bb [10015]. The different versions of the diagram from the manuscript copies and early prints can be explored with this interactive application. The user can place a transparent reference diagram on the diagram under consideration. The reference diagram can be shifted, rotated and adjusted in size. The angles in the reference diagram correspond to the logarithms of the ratios of string lengths indicated in Descartes' diagram.  By moving the mouse, the differences between the two diagrams are made audible with a sweeping sound. The diagrams are changed by pressing the keys 1 (forwards) or 2 (backwards). | descartes\_diatonic\_scale2 |
| Descartes: hexachords | René Descartes' "Compendium musicae" contains a circular pitch diagram, which reinterprets the traditional hexachord system in the syntonic tuning [10016]. The corresponding tone system has ambiguous notes D an G and uses both B and Bb, so that there are ten different pitch classes in Descartes's syntonic hexachord system.  By clicking on the highlighted dots the user can explore the syntonic hexachord system with different sounds. | descartes\_hexachords |
| Newton's tone system | Isaac Newton has extended Descartes' system of three syntonic hexachords [316] to five diatonic scales ranging from two flats to two sharps [80, 81]. Newton interprets the scales in 53-tet, a tone system which is defined by dividing the octave into 53 equal parts. This tone system can be explored with this program. | newton\_circle |
| Chromatic scales | With this program, six different tunings of the chromatic scale can be compared [10003, 10027]. The user can play sounds and listen to a short musical example with two voices. Using the right mouse button makes the sounds an octave higher.  Pyth: Pythagorean tuning with equal fifths (3:2)  12-tet: 12-tempered equal tuning, division of the octave into 12 equal semitones.  53-tet: division of the octave into 53 equal parts  Zarl\_4: distribution of the syntonic comma over four fifths (mean-tone temperament) suggested by Gioseffo Zarlino.  Zarl\_7: distribution of the Pythagorean comma over seven fifths also suggested by Zarlino.  Synt: syntonic tone system based on Pythagorean fifths (3:2) and major thirds (5:4).  The rectangular grid on top shows the corresponding tones in the syntonic tone system (with Pythagorean fifths in the horizontal and major thirds in the vertical direction). The syntonic chromatic scale is also the reference in the circular diagram indicated with black radiuses. | syntonic-circle |
| Syntonic chromatic scales | In the syntonic tone system, defined by Pythagorean fifths (3:2) and major thirds (5:4), there are many ways to define a chromatic scale [10027].  Two scales given by Salinas have 14 and 24 pitches per octave. With 24 pitches also the Greek tone system can be mapped. The scale with 14 pitches has two ambiguous notes, D and Bb, each with two pitches separated by a syntonic comma.  Kepler, Mersenne, Newton, Holder and Euler gave different solutions for chromatic scales with 12 pitches per octave. Necessarily, there are only few keys in these chromatic tone systems which realise the diatonic scale in its best form.  With the interactive application the different chromatic scales can be explored systematically. The user can choose between single tones and various chords to be played simultaneously at different pitches. When the tones are clicked with the right mouse button, the chords and scales are played successively up and down.  The tones are shown and played in the syntonic grid (one octave) and on the spiral (four octaves). The pitch classes are given saturated colours (HSB): C = red, C# = orange, D = yellow, …  Furthermore, there is a short musical example with two voices, which can be transposed into different keys [+/-] in order to make the distortions audible. The example can also be played in a syntonic tone system of 53 pitches per octave “chi\_53”, which contains 39 diatonic scales of the standard structure. An equivalent scale with D in the centre was proposed by Arthur von Oettingen (1917) [558]. | syntonic-spiral |
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