

Themensammlung für Bachelorarbeiten im Bereich „Mathematik & Musik“ (Bachelor Lehramt oder Bachelor) (Collection of topics for bachelor theses around the theme „Mathematics and Music“)

- 1) Sine Waves and the human ear
- 2) Cepstrum and Mel Frequency Cepstral Coefficients in Music Modeling
- 3) Convolution and the transformation of Sound
- 4) Bessel functions and the vibrations of a drum
- 5) What is the instantaneous frequency of a sound?
- 6) The theory of consonance and dissonance
- 7) Scales and temperaments
- 8) The wave equation for strings
- 9) The CD, the Dirac delta function
- 10) FM synthesis
- 11) Symmetry in Music and group theory
- 12) Analysing Changes in Sound
- 13) Analysing Changes in Sound and the Phase Vocoder
- 14) Physical Modeling of Strings and the Karplus-Strong Algorithm
- 15) Waveshaping and Chebychev polynomials

In addition to the listed topics it is always possible to find a topic which will meet the personal interest of each student!