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Analyzing the Sound of Space - The Glissando of the Planets and the Spiral Movement on the Sound of Earth, Saturn and Jupiter

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Abstract : The sound of the universe creates an affinity with the sounds of music. The analysis of the sound of space focuses on the existence of a tone material, the microstructure and macrostructure, and the form of the sound through the signals recorded during the flight of the spacecraft Van Allen Probes and Cassini's mission. The sound becomes from the frequencies that belong to electromagnetic waves. Plasma Wave Science Instrument and Electric and Magnetic Field Instrument Suite and Integrated Science (EMFISIS) recorded the signals from space. A transformation of that signals to audio gave the opportunity to study and analyze the sound. Due to the fact that the musical tone pitch has a frequency and every electromagnetic wave produces a frequency too, the creation of a musical score, which appears as the sound of space, can give information about the form, the symmetry, and the harmony of the sound. The conversion of space radio emissions to audio provides a number of tone pitches corresponding to the original frequencies. Through the process of these sounds, we have the opportunity to present a music score that "composed" from space. In this score, we can see some basic features associated with the music form, the structure, the tone center of music material, the construction and deconstruction of the sound. The structure, which was built through a harmonic world, includes tone centers, major and minor scales, sequences of chords, and types of cadences. The form of the sound represents the symmetry of a spiral movement not only in micro-structural but also to macro-structural shape. Multiple glissando sounds in linear and polyphonic process of the sound, founded in magnetic fields around Earth, Saturn, and Jupiter, but also a spiral movement appeared on the spectrogram of the sound. Whistles, Auroral Kilometric Radiations, and Chorus emissions reveal movements similar to musical excerpts of works by contemporary composers like Sofia Gubaidulina, Iannis Xenakis, EinojuhamiRautavara.

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