



Contribution ID: 141

Type: Talk

Music and Physics - origin of $1/f$ fluctuations in music

Thursday, July 20, 2023 7:00 PM (1 hour)

I'll talk about the universal $1/f$ fluctuations in music. Showing some pieces of orchestra music, Serenade for Strings (Tchaikovsky), etc., I'll explain the origin of the music $1/f$ fluctuations as the sound beat of unison (amplitude modulation). Using the Kuramoto and spin models, which exhibit the synchronization of frequencies, I'll demonstrate that any demodulation method is indispensable to yield $1/f$ fluctuations.

At the end of my talk, I'll show that the same mechanism is related to many $1/f$ fluctuations in various fields: seismic activity, solar flare, and the generation of density fluctuations in the early universe, ...as shown in the table <https://www.nature.com/articles/s41598-023-34816-2/tables/1>

Is this abstract from experiment?

No

Name of experiment and experimental site

N/A

Is the speaker for that presentation defined?

No

Details

N/A

Internet talk

No

Author: MORIKAWA, Masahiro

Co-author: Prof. NAKAMICHI, Akika (Kyoto-Sangyo University)

Presenter: MORIKAWA, Masahiro

Session Classification: Cosmology, Astrophysics, Gravity, Mathematical Physics

Track Classification: Main topics: Cosmology, Astrophysics, Gravity, Mathematical Physics